



Genetic Engineering and
Biotechnology Research Institute

وحدة ضمان الجودة والتطوير المستمر
Quality Assurance of
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University of Sadat City

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Academic Reference Standards for Master Postgraduate Studies of Molecular Diagnostics and Therapeutics (2015/2016)



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Academic reference standards (ARS) for Master's postgraduate studies, NAQAAE, March 2009

1. Attributes of the graduate:

The graduate of Master program of any specialty must be able to:

- 1.1. Master basics and methodologies of scientific research and the use of different tools.
- 1.2. Apply the analytical method and its use in the field of specialization.
- 1.3. Apply and integrate specialized knowledge with the relevant knowledge in professional practice.
- 1.4. Demonstrate awareness of the ongoing problems and visions in the modern area of specialization.
- 1.5. Identify and solve professional problems.
- 1.6. Master appropriate scale of the professional skills, and use of appropriate technological means to serve his /her professional practice.
- 1.7. Communicate effectively and lead work teams.
- 1.8. Make decisions in different professional contexts.
- 1.9. Use available resources to achieve the highest benefit and preservation.
- 1.10. Be aware of his/her role in community development and environmental conservation according to global and regional changes.
- 1.11. Behave to reflect commitment to act with integrity, credibility and to the rules of the profession.
- 1.12. Dedicate to academic and professional self-development and continuous learning.

2- General academic standards:

2.1. Knowledge & Understanding:



By the end of the study of Master program of any specialty, the graduate must have sufficient knowledge & understanding of:

- 2.1.1. Basic facts, theories, of the specialty and related subjects/ fields.
- 2.1.2. Mutual relation between professional practice and effects on environment.
- 2.1.3. Main scientific advances in the field of practice.
- 2.1.4. Fundamentals of ethical & legal practice.
- 2.1.5. Quality standards of the practice.
- 2.1.6. Basics and ethics of scientific research.

2.2 Intellectual skills:

By the end of the study of Master program of any specialty, the graduate must be able to do the following (related to the specialty):

- 2.2.1. Interpret, analyze & evaluate the information to solve problems.
- 2.2.2. Solve some problems that do not conform to classic data (incomplete data).
- 2.2.3. Integrate different information to solve professional problems.
- 2.2.4. Conduct a scientific research &/ or write scientific systematic approach to a research problem (hypothesis).
- 2.2.5. Evaluate risks imposed during professional practice.
- 2.2.6. Plan for professional improvement.
- 2.2.7. Take professional decisions in a wide range of professional situations.

2.3. Professional & Practical skills:

By the end of the study of Master program of any specialty, the graduate must be able to:

- 2.3.1. Competent in all basic and some of the advanced professional skills.



2.3.2. Write and appraise reports

2.3.3. Evaluate methods and tools used in specialty.

2.4. General & transferable skills:

By the end of the study of Master program of any specialty, the graduate must be able to:

2.4.1. Communicate effectively using all methods.

2.4.2. Use information technology to improve his/her professional practice.

2.4.3. Practice self appraisal and determines his/her learning needs.

2.4.4. Use different sources of information to obtain data.

2.4.5. Share in determination of standards for evaluation of others (e.g.: subordinates/ trainees etc.)

2.4.6. Work in teams and lead teams in situations comparable to his/her work level.

2.4.7. Manage time effectively.

2.4.8. Learn independently and seek continuous learning.



3. Program Academic Reference standards:

1- Graduate Attributes

- 1.1. Master basics and methodologies of molecular diagnostics and therapeutics and the use of different tools.
- 1.2. Apply the analytical method and its use in the field of molecular diagnostics and therapeutics.
- 1.3. Apply and integrate specialized knowledge with the relevant knowledge in molecular diagnostics and therapeutics
- 1.4. Demonstrate awareness of the ongoing problems and visions in the modern area of molecular diagnostics and therapeutics
- 1.5. Identify and solve professional problems related to molecular diagnostics and therapeutics field
- 1.6. Master appropriate scale of the professional skills, and use of appropriate technological means to serve his /her molecular diagnostics and therapeutics practice.
- 1.7. Communicate effectively and lead work teams.
- 1.8. Make decisions in different professional molecular diagnostics and therapeutics contexts.
- 1.9. Use available resources to achieve the highest benefit and preservation.
- 1.10. Be aware of his/her role in community development and environmental conservation according to global and regional changes.
- 1.11. Behave to reflect commitment to act with integrity, credibility and to the rules of molecular diagnostics and therapeutics
- 1.12. Dedicate to academic and professional self-development and continuous learning

.2- General Academic standers

2.1. Knowledge and understanding:

By the end of Master program, the graduate should have sufficient knowledge & understanding of:

- 2.1.1 Basic facts, theories of the molecular diagnostics and therapeutics and related subjects.
- 2.1.2 Mutual relation between professional practice of molecular diagnosis and therapy and effects on environment.
- 2.1.3 Main scientific advances of molecular diagnosis and therapy practice.
- 2.1.4 Fundamental of ethical and legal practice in fields of molecular diagnostics and therapeutics.
- 2.1.5 Quality standards of the practice in the fields of molecular diagnostics and therapeutics.
- 2.1.6 Basics and ethics of molecular diagnostics and therapeutics scientific research.

2.2. Intellectual Skills:

By the end of Master program, the graduate should have the following abilities:



-
- 2.2.1 Interpretation, analysis and evaluation of the information to solve problems in the field of molecular diagnostics and therapeutics.
 - 2.2.2 Problem solving that doesn't conform to classic data.
 - 2.2.3 Integration of different information to solve professional problems in development of molecular diagnostics and therapeutics.
 - 2.2.4 Conduct of scientific researches and/or writing scientific systematic approaches to research problems regarding molecular diagnostics and therapeutics.
 - 2.2.5 Evaluation of risks imposed during professional practice of molecular diagnosis and therapy.
 - 2.2.6 Planning for professional improvement in the field of molecular diagnostics and therapeutics.
 - 2.2.7 Professional decisions taking in various professional situations of molecular diagnosis and therapy.

2.3. Professional Skills

By the end of Master program, the graduate should have the following abilities:

- 2.3.1 Competent in all basic and some of the advanced professional skills in molecular diagnosis and therapy.
- 2.3.2 Writing and appraisal of reports related to molecular diagnosis and therapy.
- 2.3.3 Evaluation of methods and tools used in the fields of molecular diagnostics and therapeutics.

2.4. General & Transferable skills

By the end of Master's program, the graduate should have the following abilities:

- 2.4.1 Effective communication using all methods.
- 2.4.2 Use of information technology to improve his/her professional practice.
- 2.4.3 Self-appraisal and determination of his learning needs.
- 2.4.4 Use of different sources of information to obtain data.
- 2.4.5 Determination of standards for evaluation of others
- 2.4.6 Work in teams and Leadership of work teams in different contexts
- 2.4.7 Effective time management.
- 2.4.8 Independent learning and seeking of continuous learning.



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The matrix between ARS for NAQAAE and Program ARS



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	ARS of NAQAAE	Program ARS
Knowledge & Understanding	1. Basic facts, theories, of the specialty and related subjects/ fields.	1. Basic facts, theories of the molecular diagnostics and therapeutics and related subjects.
	2. Mutual relation between professional practice and effects on environment.	2. Mutual relation between professional practice of molecular diagnosis and therapy and effects on environment.
	3. Main scientific advances in the field of practice.	3. Main scientific advances of molecular diagnosis and therapy practice.
	4. Fundamentals of ethical & legal practice.	4. Fundamental of ethical and legal practice in fields of molecular diagnostics and therapeutics.
	5. Quality standards of the practice.	5. Quality standards of the practice in the fields of molecular diagnostics and therapeutics.
	6. Basics and ethics of scientific research	6. Basics and ethics of molecular diagnostics and therapeutics scientific research
Intellectual Skills	1. Interpret, analyze & evaluate the information to solve problems.	1. Interpretation, analysis and evaluation of the information to solve problems in the field of molecular diagnostics and therapeutics.



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	2. Solve some problems that do not conform to classic data (incomplete data).	2. Problem solving that doesn't conform to classic data
	3. Integrate different information to solve professional problems	3. Integration of different information to solve professional problems in development of molecular diagnostics and therapeutics.
	4. Conduct a scientific research &/ or write scientific systematic approach to a research problem (hypothesis).	4. Conduct of scientific researches and/or writing scientific systematic approaches to research problems regarding molecular diagnostics and therapeutics.
	5. Evaluate risks imposed during professional practice	5. Evaluation of risks imposed during professional practice of molecular diagnosis and therapy
	6. Plan for professional improvement.	6. Planning for professional improvement in the field of molecular diagnostics and therapeutics
	7. Take professional decisions in a wide range of professional situations.	7. Professional decisions taking in various professional situations of molecular diagnosis and therapy.
Professional Skills	1. Competent in all basic and some of the advanced professional skills.	1. Competent in all basic and some of the advanced professional skills in molecular diagnosis and therapy.
	2. Write and appraise reports	2. Writing and appraisal of reports related to molecular diagnosis and therapy
	3. Evaluate methods and tools used in specialty	3. Evaluation of methods and tools used in the fields of molecular



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		diagnostics and therapeutics
General and Transferable skills	1. Communicate effectively using all methods.	1. Effective communication using all methods.
	2. Use information technology to improve his/her professional practice.	2. Use of information technology to improve his/her professional practice.
	3. Practice self-appraisal and determines his/her learning needs	3. Self-appraisal and determination of his learning needs.
	4. Use different sources of information to obtain data.	4. Use of different sources of information to obtain data.
	5. Share in determination of standards for evaluation of others (e.g.: subordinates/ trainees etc.)	5. Determination of standards for evaluation of others
	6. Work in teams and lead teams in situations comparable to his/her work level.	6. Work in teams and Leadership of work teams in different contexts
	7. Manage time effectively.	7. Effective time management.
	8. Learn independently and seek continuous learning.	8. Independent learning and seeking of continuous learning



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Molecular Diagnostics and Therapeutics Master Program Specification (2015/2016)



University: University of Sadat City
Institute: Genetic Engineering and Biotechnology Research Institute

Program Specification

A-Basic Information

- 1- Program title: Master (M.Sc.) Molecular diagnosis
- 2- Program type: Single ✓
- 3- Department: Molecular Diagnostics and Therapeutics
- 4- Program Coordinator: Dr. Randa Mohamed Talaat
- 5- Program approval date: 20/09 /2015

B- Professional Information:

The scope of the program spans many interdisciplines including: immunology, immune diseases and cancer; physiology, human haematology and related diseases; molecular biology related techniques and molecular testing of human, animal and plant; biotechnology and pharmaceutical biotechnology.

1- Program aims:

The program aims to broaden the knowledge and understanding of the student in the field of biological processes, the molecular basis of its pathologic states and related diseases, molecular and genetic diagnostic techniques. The elective courses will be chosen for each student according to his thesis in one of these lines: fundamentals of immunology, immune diseases and related diagnostic techniques, hematology, related diseases and molecular analysis, cancer, its molecular basis and biological markers, genetics and genetic diseases, pharmaceutical biotechnology and pharmacodiagnosics.

This is for the purpose of preparing a Master holder capable of:

- 1.1. Self –learning and developing scientific research skills in the field of molecular diagnostics and therapeutics.
- 1.2. Formulating basic scientific research methodologies & applying the different tools in the field of molecular diagnosis, molecular therapeutic targets and pharmacodiagnosics.
- 1.3. Identifying elements of problems and appointing available resources for problem solving in order to achieve highest benefits in the field of molecular diagnostics and therapeutics.
- 1.4. Applying analytical methods besides specialized knowledge and using appropriate technological means in the field of molecular diagnostics.
- 1.5. Demonstrating awareness of identifying and interpreting problems in the field of molecular diagnostics and therapeutics.

2- Intended learning outcomes (ILOs):



2/1 Knowledge and understanding

By the end of this program, the graduate must be able to:

- a. Describe the basic facts and theories of the biological processes, related biomedical issues and their molecular pathophysiology and related diseases focusing particularly on (human physiology, hematopoietic system, bone marrow, immune system and pathology/physiology of its cells), related biomedical issues and their pathology, cancer and medical virology.
- b. Express the mutual relation between professional practice in the molecular diagnostics laboratories, identification of molecular markers, design of molecular probes, molecular therapeutics and the clinical practice in one of these fields: immunology, haematology, cancer, genetic diseases, infectious diseases in human, animals and plants.
- c. Classify the main scientific advances of biotechnology, genomics and post-genomics era and its applications in molecular diagnosis, re-classification of pathological issues, individualized therapy practice and pharmaceutical biotechnology.
- d. Express the quality standards of the practice in the fields of molecular diagnostics laboratories using DNA manipulation techniques, gene probes, PCR technology and immunodiagnostic techniques.
- e. Summarize the basics and ethics of scientific research and, scientific writing and publication.
- f. Discuss the basic rules and scientific terms of English technical terms used in scientific research in molecular and therapeutics area.
- g. Describe the principles of data collection, analysis and presentation using computers & scientific software.
- h. Describe the principles of human genetics, heredity and human diversity, nucleic acid chemistry and related biological processes of DNA replication, gene expression regulation, role of different types of RNA in relation to normal and diseased conditions and nucleic acid applications in research, human identification and molecular forensic medicine and as therapeutics.
- i. List factors contributing to the development of various types of plant and animal diseases and their molecular basis.
- j. Describe the principles of biotechnology and practical molecular approaches used for therapeutics and pharmaceuticals.
- k. Summarize the fundamental aspects of related thesis topics and the techniques used.



2/2 Intellectual Skills:

By the end of this program, the graduate must be able to:

- Interpret different information to solve molecular diagnosis and therapy professional problems.
- Integrate different relevant knowledge to solve health related problems of cancer, immune, hematologic and viral diseases, and subject identification in molecular forensic medicine.
- Plan problem-solving-based scientific research in the field of immune diseases, cancer, hematologic disorders, viral diseases, plant and animal diseases.
- Make professional decisions in the field of molecular diagnosis and therapy.
- Assess English technical terms used in scientific research.
- Compare different ways of using computers for data analysis and presentation.
- Analyze scientific outputs of given research information.
- Compare disease etiological agents with the state of diseases.
- Predict molecular basis of diseases.
- Analyze basis of molecular therapeutics.
- Interpret appropriate procedures for solving clinical practice problems.

2/3 Professional Skills:

By the end of this program, the graduate must be able to:

- Practice basic techniques and methods relevant to the molecular diagnosis of diseases in a safe, logistical and ethical manner.
- Write and appraise professional reports (laboratory investigation, research reports).
- Apply appropriate computational and statistical packages and tools for handling, manipulating and presenting experimental results.
- Apply procedures used in molecular therapy.
- Represent data of an experiment in a digital form or as a poster.

2/4 General and Transferable Skills:

By the end of this program, the graduate must be able to:

- Communicate effective communication skills.
- Use information technology to improve his/her professional practice.
- Practice self-appraisal and determine his/her learning needs.
- Use different scientific data resources (textbooks, journals, periodicals and internet web sites) to gain scientific knowledge and data.
- Determine standards for evaluation of others.



- f. Work in team player & team-leader in different professional contexts.
- g. Manage time effectively.
- h. Practice independent learning and seek continuous learning.

4. Program Academic standards:

The department council established the program ARS adopted by the ARS of NAQAAE and approved in the department council meeting in 9/2015

5. Bench marks: 1-ARS of NAQAAE

2- Program Academic standards

6. Curriculum Structure and Content:

a- Program duration: 2 years minimum

b- Program structure:

No. of hours/units:					
Lectures	27	Lab./ Exercise	18	Total	45
Compulsory	32	Optional	----	Elective	13

- basic sciences courses
- Specialized courses

No.	%
12	25
30	69

- Other sciences courses

-	-
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- Practical (Thesis)

The time spent in achievement of a thesis 8 hrs/week	----
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c- Program Levels: Not Applicable



d- Program Courses:

d.1 Compulsory (General courses):

Code No.	Course Title	No. of Units (hrs)	No. of hours/week			Year/Level	Semester
			Lect.	Ex.	App.		
-	English language	3	3	-	-	1	1
-	Research and research methodology	6	2	-	8	1	1
A-80	Computer	3	2	-	2	1	2
A-23	Biotechnology 1	3	3	-	-	1	2
B7-45	Special topics	3	3			2	1
B7-46	Seminars	3	-	-	6	2	2
c-23	DNA manipulation protocols	3	2		2	2	2
	Total	24	16	-	16	-	-

d.2 Elective: Specialized courses: (At least 4 courses from the listed below)

Code No.	Course Title	No. of Units	No. of hours/week			Year/Level	Semester
			Lect.	Exer.	Appl.		
A-16	Biochemistry of nucleic acids	3	3	-			
B1-18	Gene Probes	3	3	-	-		
B7-2	Antibodies II	3	3	-	-		
B7-4	Biology of cancer	3	3	-	-		
B7-5	Cancer at the genetic level	3	3	-	-		
B7-8	Clinical immunology	3	3	-	-		
B7-9	Comparative hematology I	3	3	-	-		
B7-16	Heredity and human diversity	3	3	-	-		
B7-17	Human bone marrow	3	3	-	-		



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B7-18	Human cancer	3	3	-	-		
B7-20	Human genetics I	3	3	-	-		
B7-22	Human physiology	3	3	-	-		
B7-23	Immunoassays	3	3	-	-		
B7-26	Lymphocytes	3	3	-	-		
B7-28	Medical virology	3	3	-	-		
B7-31	Molecular diagnosis of animal diseases	3	3	-	-		
B7-32	Molecular diagnosis of plant pathology	3	3	-	-		
B7-33	Molecular forensic medicine	3	3	-	-		
B7-36	Monoclonal antibody	3	3	-	-		
B7-39	Pharmaceutical biotechnology	3	3	-	-		
B7-40	Physiology and pathology of leukocytes	3	3	-	-		
B7-43	The molecular biology of immune diseases I	3	3	-	-		
C-101	Practical approaches in PCR	3	2	-	2		

Course of special topics code number (B7-45) is variable according to the student's sub-specialization needs. The advisor chooses what is suitable for his candidate; a topic which is not included in the program, which will add to the student skills in the field of his thesis.

Course of seminars code number (B7-46) is a course that includes the preliminary literature material related to the topic of the student's master thesis. The student is required to present his research material as a PowerPoint slides.

Practical skills are gained from courses with code starting with a "C" letter (eg. C-23) while Professional skills will be included in within the course material (all courses with code starting with a "B7") Professional skills include the student ability to predict and investigate the molecular basis of a disease or patient response to treatment according to his genetic makeup. Evaluate existing biomarkers and designing research for new biomarkers discovery.

d.3 M.Sc. Thesis:

All MSc-degree students should prepare a thesis in topics related to Molecular Diagnostics and Therapeutics. The department and the ethical committees must approve the protocol of the research. Student evaluation is performed by conducting interviews with the department staff. The thesis should include a review part and a research part. The thesis is supervised by one or more senior staff members of the Molecular Diagnostics and Therapeutics Department and may include other specialties according to the nature of the research. The thesis should be evaluated and approved by a committee of three professors including one of the supervisors and two external professor.



7. Program admission requirements:

Bachelor degree from appropriate practical faculty from Egyptian or an equivalent university with general grade (good) or Diploma in related fields.

8-Regulations for progression and program completion:

Successful completion of the required courses (equivalent to at least 12 units) in addition to compulsory courses: English language, Computer, Research and Research Methodology, Biotechnology, Special Topics, Seminars and a practical course (DNA manipulation protocols).

Excellent	From 90 to 100 degrees
Very Good	From 80 to less than 90 degrees
Good	From 70 to less than 80 degrees
Pass	From 60 to less than 70 degrees

- Approved completion of the research experiments.
- Scientific writing of M.Sc. thesis.
- Successfully passes of thesis open defense examination.

9-Assessment methods of program intended learning outcomes:

No.	Method	Intended Learning Outcomes (ILOs)
1	Semester Work (5 th & 10 th)	Measure problem solving skills, presentation data and discussion and work on team
2	Midterm Exam (6 th) Week	Measure abilities on concentration and understanding scientific points & background.
3	Oral exam (14 th) Week	Measure analysis, presentation, and discussion skills.
4	Practical exam 13 th Week	Measure practical, application skills, and professional art skills
5	Written (final) exam (15 th) Week	Measure remembering & innovating skills
6	Thesis discussion	To assess the ability to write a review article, perform the needed practical steps and to present the results in tables and graphs. In addition, the skills of analysis of results and discussion with previous findings obtained by other



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	authors are also assessed.
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10. Program evaluation methods

No.	Evaluator	Tool	Sample
1	Senior students	Questionnaire	20
2	Alumni	Depth meeting	5
3	Stakeholders (Employers)	Nucleus meeting	5
4	External Evaluator(s) report	Report	1-2
5	Staff	Questionnaire	2

11. Evaluators

No.	Evaluator name	
1	Prof Dr/ Neveen Abdelhafez	Professor of clinical pathology/Benha University
2	Prof Dr/ Nahed Saleh	Professor of clinical pathology/ University of Sadat City

Program coordinator: Dr. Randa Mohamed Talaat

Head of Department: Prof. Dr. Randa Mohamed Talaat



Matrix between Program ARS and ILO's

	Program ARS	ILO's
Knowledge & Understanding	Basic facts, theories of the molecular diagnostics and therapeutics and related subjects.	Describe the basic facts and theories of the biological processes, related biomedical issues and their molecular pathophysiology and related diseases focusing particularly on (human physiology, hematopoietic system, bone marrow, immune system and pathology/physiology of its cells), related biomedical issues and their pathology, cancer and medical virology.
	Mutual relation between professional practice of molecular diagnosis and therapy and effects on environment	Express the mutual relation between professional practice in the molecular diagnostics laboratories, identification of molecular markers, design of molecular probes, molecular therapeutics and the clinical practice in one of these fields: immunology, haematology, cancer, genetic diseases, infectious diseases in human, animals and plants



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	Main scientific advances of molecular diagnosis and therapy practice.	Classify the main scientific advances of biotechnology, genomics and post-genomics era and its applications in molecular diagnosis, re-classification of pathological issues, individualized therapy practice and pharmaceutical biotechnology
	Fundamental of ethical and legal practice in fields of molecular diagnostics and therapeutics	Summarize the basics and ethics of scientific research and, scientific writing and publication
	Quality standards of the practice in the fields of molecular diagnostics and therapeutics.	Express the quality standards of the practice in the fields of molecular diagnostics laboratories using DNA manipulation techniques, gene probes, PCR technology and immunodiagnostic techniques.
	Basics and ethics of molecular diagnostics and therapeutics scientific research	Summarize the basics and ethics of scientific research and, scientific writing and publication
Intellectual Skills:	Interpretation, analysis and evaluation of the information to solve problems in the field of molecular diagnostics and therapeutics.	Interpret different information to solve molecular diagnosis and therapy professional problems.
	Problem solving that doesn't conform to classic data	Plan problem-solving-based scientific research in the field of immune diseases, cancer, hematologic disorders, viral diseases, plant and animal diseases.
	Integration of different information to solve professional problems in development of molecular diagnostics and therapeutics	Integrate different relevant knowledge to solve health related problems of cancer, immune, hematologic and viral diseases, and subject identification in molecular forensic medicine. - Interpret appropriate procedures



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		for solving clinical practice problems.
	Conduct of scientific researches and/or writing scientific systematic approaches to research problems regarding molecular diagnostics and therapeutics.	Assess English technical terms used in scientific research - Compare different ways of using computers for data analysis and presentation - Analyze basis of molecular therapeutics
	Evaluation of risks imposed during professional practice of molecular diagnosis and therapy	Compare disease etiological agents with the state of diseases
	Planning for professional improvement in the field of molecular diagnostics and therapeutics.	Analyze scientific outputs of given research information - Predict molecular basis of diseases
	Professional decisions taking in various professional situations of molecular diagnosis and therapy.	Make professional decisions in the field of molecular diagnosis and therapy.
Professional Skills:	Competent in all basic and some of the advanced professional skills in molecular diagnosis and therapy.	Practice basic techniques and methods relevant to the molecular diagnosis of diseases in a safe, logistical and ethical manner.
	Writing and appraisal of reports related to molecular diagnosis and therapy	Write and appraise professional reports (laboratory investigation, research reports - Apply appropriate computational and statistical packages and tools for handling, manipulating and presenting experimental results
	Evaluation of methods and tools used in the fields of molecular	Apply procedures used in molecular therapy



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	diagnostics and therapeutics	-Represent data of an experiment in a digital form or as a poster.
General & Transferable skills	Effective communication using all methods.	Communicate effective communication skills.
	Use of information technology to improve his/her professional practice	Use information technology to improve his/her professional practice
	Self-appraisal and determination of his learning needs.	Practice self-appraisal and determine his/her learning needs.
	Use of different sources of information to obtain data	Use different scientific data resources (textbooks, journals, periodicals and internet web sites) to gain scientific knowledge and data.
	Determination of standards for evaluation of others	Determine standards for evaluation of others
	Work in teams and Leadership of work teams in different contexts	Work in team player & team-leader in different professional contexts.
	Effective time management.	Manage time effectively.
	Independent learning and seeking of continuous learning.	Practice independent learning and seek continuous learning



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Matrix of the targeted Knowledge and Skills of the Program

No.	Course No.	Course title	Knowledge & Understanding								
			a	b	c	d	e	f	g	h	i
1	-	English language						X			
2	A-80	Computer							X		
3	-	Research and Research methodology					X				
4	A-23	Biotechnology I			X						
5	B7-45	Special Topics									
6	B7-46	Seminars							X		
7	C-23	DNA manipulation protocols		X		X					
8	A-16	Biochemistry of nucleic acids								X	
9	B1-18	Gene Probes		X		X					
10	B7-2	Antibodies II	X								
11	B7-4	Biology of cancer	X								
12	B7-5	Cancer at the genetic level	X		X						
13	B7-8	Clinical immunology	X								
14	B7-9	Comparative hematology I	X								
15	B7-16	Heredity and human diversity								X	
16	B7-17	Human bone marrow	X								
17	B7-18	Human cancer	X			X					
18	B7-20	Human genetics I								X	
19	B7-22	Human physiology	X								
20	B7-23	Immunoassays		X		X					
21	B7-26	Lymphocytes	X								
22	B7-28	Medical virology	X								
23	B7-31	Molecular diagnosis of animal diseases		X							X
24	B7-32	Molecular diagnosis of plant pathology		X							X
25	B7-33	Molecular forensic medicine		X						X	
26	B7-36	Monoclonal antibody	X								
27	B7-39	Pharmaceutical biotechnology			X						
28	B7-40	Physiology and pathology of leukocytes	X								



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No.	Course	Course title	Knowledge & Understanding									
29	B7-43	The molecular biology of immune diseases I	X									
30	C-101	Practical approaches in PCR		X		X						
MSc Thesis				X								

No.	Course No.	Course title	Intellectual Skills:										
			a	b	c	d	e	f	g	h	i	j	k
1	-	English language					X		X	X			
2	A-80	Computer							X	X	X		
3	-	Research and Research methodology	X		X			X			X		
4	A-23	Biotechnology I		X	X					X			
5	B7-45	Special Topics			X			X		X			
6	B7-46	Seminars			X			X			X		
7	C-23	DNA manipulation protocols	X	X			X	X	X				X
8	A-16	Biochemistry of nucleic acids						X					
9	B1-18	Gene Probes	X	X									
10	B7-2	Antibodies II	X										
11	B7-4	Biology of cancer				X			X				
12	B7-5	Cancer at the genetic level		X		X			X				
13	B7-8	Clinical immunology	X							X			
14	B7-9	Comparative hematology I	X										
15	B7-16	Heredity and human diversity											
16	B7-17	Human bone marrow										X	
17	B7-18	Human cancer		X	X	X							
18	B7-20	Human genetics I						X					
19	B7-22	Human physiology		X									
20	B7-23	Immunoassays	X				X	X	X	X			
21	B7-26	Lymphocytes											
22	B7-28	Medical virology							X				X
23	B7-31	Molecular diagnosis of animal	X						X				



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No.	Course	Course title	Knowledge & Understanding									
		diseases										
24	B7-32	Molecular diagnosis of plant pathology	X									
No.	Course	Course Title	Intellectual skills									
25	B7-33	Molecular forensic medicine	X	X	X		X	X	X			
26	B7-36	Monoclonal antibody					X					
27	B7-39	Pharmaceutical biotechnology				X						
28	B7-40	Physiology and pathology of leukocytes					X					
29	B7-43	The molecular biology of immune diseases I		X		X						
30	C-101	Practical approaches in PCR	X									
MSc Thesis			X	X	X	X	X	X	X			

No.	Course No.	Course title	Professional and practical skills									
			a	b	c	d	e					
1	-	English language		X								
2	A-80	Computer			X		X					
3	-	Research and Research methodology			X							
4	A-23	Biotechnology I	X			X						
5	B7-45	Special Topics			X		X					
6	B7-46	Seminars			X		X					
7	C-23	DNA manipulation protocols	X	X	X	X						
8	A-16	Biochemistry of nucleic acids		X								
9	B1-18	Gene Probes		X								
10	B7-2	Antibodies II	X			X						
11	B7-4	Biology of cancer		X								
12	B7-5	Cancer at the genetic level		X								
13	B7-8	Clinical immunology		X								
14	B7-9	Comparative hematology I		X								
15	B7-16	Heredity and human diversity		X								
16	B7-17	Human bone marrow				X						



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No.	Course	Course title	Professional and practical skills						
17	B7-18	Human cancer		X					
18	B7-20	Human genetics I		X					
19	B7-22	Human physiology		X					
20	B7-23	Immunoassays	X						
21	B7-26	Lymphocytes		X			X		
22	B7-28	Medical virology		X					
23	B7-31	Molecular diagnosis of animal diseases	X	X					
24	B7-32	Molecular diagnosis of plant pathology	X	X					
25	B7-33	Molecular forensic medicine	X	X					
26	B7-36	Monoclonal antibody	X				X		
27	B7-39	Pharmaceutical biotechnology					X		
28	B7-40	Physiology and pathology of leukocytes	X	X					
29	B7-43	The molecular biology of immune diseases I	X						
30	C-101	Practical approaches in PCR	X	X	X				
MSc Thesis			X	X	X	X	X		

No.	Course No.	Course title	General and Transferable skills							
			a	b	c	d	e	f	g	h
1	-	English language	X		X			X	X	X
2	A-80	Computer	X	X	X	X			X	X
3	-	Research and Research methodology		X		X		X	X	
4	A-23	Biotechnology I	X			X		X		
5	B7-45	Special Topics						X		
6	B7-46	Seminars						X		
7	C-23	DNA manipulation protocols			X	X				X
8	A-16	Biochemistry of nucleic acids		X		X				X
9	B1-18	Gene Probes			X	X				X
10	B7-2	Antibodies II		X	X	X				X
11	B7-4	Biology of cancer		X	X				X	X
12	B7-5	Cancer at the genetic level		X	X				X	X
13	B7-8	Clinical immunology				X				X
14	B7-9	Comparative hematology I			X	X				X



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No.	Course	Course title	General and Transferable skills							
15	B7-16	Heredity and human diversity			X	X				X
16	B7-17	Human bone marrow			X	X				X
17	B7-18	Human cancer			X	X				X
18	B7-20	Human genetics I				X				
19	B7-22	Human physiology			X	X				X
20	B7-23	Immunoassays			X	X				X
21	B7-26	Lymphocytes			X	X				X
22	B7-28	Medical virology			X	X				X
23	B7-31	Molecular diagnosis of animal diseases			X	X				X
24	B7-32	Molecular diagnosis of plant pathology			X	X				X
25	B7-33	Molecular forensic medicine			X	X				X
26	B7-36	Monoclonal antibody			X	X				X
27	B7-39	Pharmaceutical biotechnology			X	X				X
28	B7-40	Physiology and pathology of leukocytes			X	X				X
29	B7-43	The molecular biology of immune diseases I				X				
30	C-101	Practical approaches in PCR			X	X				X
MSc Thesis			X	X	X	X	X	X	X	X

Program coordinator: Dr. Randa Mohamed Talaat

Head of department: Prof. Dr. Randa Mohamed Talaat



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Courses specifications



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Department: Molecular Diagnostics and Therapeutics

Course Specifications

1. Course information:							
Course Code:	A-16	Course Title:	Biochemistry of Nucleic Acid				
No. units	3	Lec.	3	App.	-	Level	Master
Department	N.A. (General course)						

2. Course Aims	
	Provide fundamentals of: nucleic acid structure, physical and chemical properties, functions and regulation of gene expression on different levels.

3. Intended Learning Outcomes of Course (ILO's)	
a. Knowledge and Understanding:	1- Summarize the principles of DNA/RNA structure, related processes and chromatin organization, DNA repair and DNA methylation. 2- Describe the complexity of eukaryotic genomes and its application. 3 -Express the basic concepts of regulation of genetic information. 4 - List types of RNA and their structure and function.
b. Intellectual skills:	1- Compare structure and function of DNA and RNA. 2- Analyze nucleic acids structure and properties to their functions and different related processes.
c. Professional Skills of course:	1- Prepare scientific reports and research papers in the area of biochemistry of nucleic acids, regulation of gene expression in eukaryotes.
d. General and Transferable Skills	1- Use different sources of information to obtain data for the nucleic acid drug targeted design course topics. 2- Use displaying devices to conduct presentations in the course topics. 3- Manage time effectively & work in teams.

4. Course Contents:



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No.	Topic
1	Nucleic acid structure, physical properties and packaging
2	DNA repair, DNA methylation, imprinting and mutation
3	Complexity of eukaryotic genomes
4	Regulation of gene expression: DNA level
5	RNA types synthesis and processing
6	RNA functions and applications
7	Regulation of gene expression: RNA level

5. Teaching and Learning Methods	
	Lectures Class activities Discussion Presentation Reports

6. Teaching and Learning Methods (for students with special needs)	Not applied
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7. Student Assessment:			
1. Assessment Methods:	<ul style="list-style-type: none">* Semester Works* Midterm Exam* Oral Exam* Written (Final) Exam		
2. Assessment Schedule	<ul style="list-style-type: none">* (5th & 10th weeks),* (6th) Week,* (14th) Week,* (15th) Week.		
3. Weighting of Assessments	10 degrees	ratios	10 %
	10 degrees	ratios	10 %
	20 degrees	ratios	20%
	60 degrees	ratios	60 %
	Total 100 degrees	ratios	100%



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8. List of References:	
a. Notes	-
b. Essential Books (Text Books)	<ul style="list-style-type: none">• The Cell- A Molecular approach by Cooper and Hausman (2009) chapters 5,6,7• Pdf.files for miRNA biogenesis and function
c. Suggested Books	<ul style="list-style-type: none">• Molecular Biology of the Cell, 4th edition. Alberts, Johnson, Lewis, Raff, Roberts and Walter. Garland Pub. Co., 2010
1- Periodicals, Web Sites, ... etc ...	http://themedicalbiochemistrypage.org

Course coordinator: Dr Manal Osama El Hamshary

Head of the department council: Prof. Dr. Randa M. Talaat

Date:14/6/2011



Course Matrix

Course Contents	Week No.	Knowledge and Understanding a	Intellectual skills b	Professional Skills of course c	General and Transferable Skills d
Nucleic acid structure, physical properties and packaging	1&2	1	1	1	-
DNA repair, DNA methylation, imprinting and mutation	3&4	1	2	1	1,2,3
Complexity of eukaryotic genomes	5&6	2	2	1	-
Regulation of gene expression: DNA level	7&8	3	2	1	1,2,3
RNA types synthesis and processing	9&10	3,4	1	1	1,2,3
RNA functions and applications	11&12	3,4	1	1	1,2,3
Regulation of gene expression: RNA level	13&14	3,4	2	1	1,2,3

Course coordinator: Dr Manal Osama El Hamshary

Head of the department council: Prof. Dr. Randa M. Talaat



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Department: Molecular Diagnostics and Therapeutics

Course Specifications

9. Course information:							
Course Code:	B1-18	Course Title:	Gene probes				
No. units	3	Lec.	3	App.	-	Level	Master
Department	Molecular Biology						

10. Course Aims	
	<p>a- Applying analytical methods & specialized knowledge and using appropriate technological means in molecular biotechnology (Gene Probes).</p> <p>b- Classifying main scientific advances of using the quality assurance principles between the homogeneous test procedure and signal detection.</p> <p>c- Summarizing actual fundamental of ethical and legal practice in the field of the determination a nucleic acid sequence (a "gene probe assay")</p> <p>d- Appointing suitable methods for different basic properties of the non-hybridized labeled gene probe contributes to a smaller extent to undesired signal formation.</p> <p>e- Planning paraphrasing English technical terms processes using in scientific researches of The homogeneous test procedure is fundamentally characterized by the absence of a physical separation step between the nucleic acid hybridization and the signal detection.</p>

11. Intended Learning Outcomes of Course (ILO's)	
e. Knowledge and Understanding:	<p>1- Express the attitudes and ethical basis in scientific research and in molecular biology applications (gene probes).</p> <p>2- Describe basic facts and theories of the biotechnology of qualitatively or quantitatively detecting the signal to be attributed to the label using a method suitable.</p> <p>3 - Classify main scientific advances of relationship between the which the receptor is a monoclonal modified</p>



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	antibody or a chemically modified antibody fragment. 4- Summarize the mechanisms regulating of gene expression biotechnology and gene probes.
f. Intellectual skills:	1- Appoint suitable methods for different genetic engineering of agriculture and medicine in gene probes. 2- Compare between different methods of molecular alterations in gene probes 3- Analyze scientific researches to solve the problems of application in gene probes. 4- Evaluate professional risks during treatment and determination of gene probes.
g. Professional Skills of course:	1- Analyses the data from your own and other people's experiments and to interpret them in the light of published work (gene probes). 2- Measure the molecular probes in biochemistry analysis and determination. 3 Form different types techniques in gene probes analysis and evaluations. 4- Apply analytical methods for determination and analysis experimental models of different applications. 5 - Calculate a biochemical accurate observations and measurements in gene probes target.
h. General and Transferable Skills	1- Communicate effectively using all methods with public, collegeus and appropriate authorities. 2- Use information technology to improve his professional practice in internet and relative information. 3- Practice self appraisal and determines his learning needs. 4- Use different sources of information to obtain data for a given gene probes course topics. 5- Work in teams and capable to Manage time effectively . 6- Work as team leader in situation comparable to his level. 7- Learn independently and seek continuous learning in gene probes. 8-Take a professional decision for suitable methods of types of label.

12. Course Contents:	
No.	Topic
1	Probe Design
2	Gene Probes



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3	Oligonucleotide Probes
4	Labeling and Detection
5	Types of Label
6	Labeling Methods , Southern blot, Northern blot
7	Hybridization Conditions , Applications

13. Teaching and Learning Methods	
	Lectures Class activities Discussion Presentation Reports

14. Teaching and Learning Methods (for students with special needs)	Not applied
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15. Student Assessment:													
a. Assessment Methods:	<ul style="list-style-type: none"> - work on team - Midterm - Oral - Written 												
b. Assessment Schedule	-Semester Works (5 th &10 th) -Midterm Exam (6 th) Week -Oral Exam (14 th) Week - Written (Final) Exam (15 th) Week.												
c. Weighting of Assessments	<table> <tr> <td>Degrees</td><td>%</td></tr> <tr> <td>-10</td><td>10%</td></tr> <tr> <td>-10</td><td>10%</td></tr> <tr> <td>-20</td><td>20%</td></tr> <tr> <td>-60</td><td>60%</td></tr> <tr> <td>Total=100</td><td>100%</td></tr> </table>	Degrees	%	-10	10%	-10	10%	-20	20%	-60	60%	Total=100	100%
Degrees	%												
-10	10%												
-10	10%												
-20	20%												
-60	60%												
Total=100	100%												

16. List of References:	
d. Notes	
e. Essential Books (Text Books)	1- Lewin B.(2006). Essential Genes. Published by Pearson Education, Inc. USA.(2006). 2- Arrand et al in Nucleic Acid Hybridization: A Practical Approach, IRL



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	<p>Press, Washington D.C. (1985) pp. 42-45.</p> <p>3- W.P. Collins, "Alternative Immunoassays", John Wiley and Sons, (1985). Table of Contents.</p> <p>4- S. L. Beaucage et al., "Tetrahedron Report Number 329", Tetrahedron, vol. 49, No. 10, (1993), pp. 1925-1963.</p> <p>5- L. J. Arnold Jr., "Assay Formats Involving Acridinium-Ester Labeled DNA Probes", Clin. Chem., vol. 35, No. 8, (1989), pp. 1588-1594.</p> <p>6- J. Goodchild, "Conjugates of Oligonucleotides and Modified Oligonucleotides: A Review of Their Synthesis and Properties", Bioconjugate Chemistry, vol. 1, No. 3, (May/Jun. 1990), pp. 165-187.</p> <p>7- J. A. Matthews et al., "Enhanced Chemiluminescent Method for the Detection of DNA Dot-Hybridization Assays", Analytical Biochemistry, vol. 151, (1985), pp. 205-209.</p>
f. Suggested Books	<p>2- <u>Molecular Cell Biology</u>, 5th edition. Lodish, Berk, Matsudaira, Kaiser, Krieger, Scott, Zipursky, and Darnell. W.H. Freeman & Co., 2011.</p> <p>3- <u>Genes VIII</u>. Lewin. Prentice Hall, 2011</p>
4- Periodicals, Web Sites, ... etc ...	<p>a- Periodicals, Web sites, ... etc ... www.prenhall.com/lewin.</p> <p>b- www.principialgenetics.com.</p> <p>c- http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=mboc4.TOC&depth=2</p> <p>d- http://bcs.whfreeman.com/lodish6e/</p>

Course coordinator: Prof. Dr. Amal Ahmed Abd El- Aziz.

Head of the department council: Prof. Dr. Randa M. Talaat

Date: 14/6/2011



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Matrix of the Course

Course Contents	Week No.	Knowledge and Understanding a	Intellectual skills b	Professional Skills c	General and Transferable Skills d
Probe Design	1&2	1, 4	1,	1, 2	1, 2
Gene Probes	3&4	2, 3	1, 2	1, 3	1, 3
Oligonucleotide Probes	5&6	1, 2	1, 3	1, 5	1, 4
Labeling and Detection	7&8	1, 2	1, 2	1, 3	1, 3, 4
Types of Label	9&10	1, 3,	2, 3	1, 4	1, 5, 6
Labeling Methods , Stheuer blot, North blot	11&12	3, 4	2, 4	1, 5	1, 4, 5
Hybridization Conditions , Applications	13&14	3, 4	1, 4	1, 3, 5	1, 5, 6

Course Coordinatores: Prof. Dr. Amal Abd El-Aziz



Department: Molecular Diagnostics and Therapeutics

Course Specifications

17. Course information:							
Course Code:	B7-2	Course Title:	Antibodies-2				
No. units	3	Lec.	3	App.	-	Level	Master
Department	Molecular Diagnostics and Therapeutics						

2- Course Aims:	<ol style="list-style-type: none"> 1- knowing the major histocompatibility complex 2- Understanding antibody affinity and avidity 3- Understand Antibody genetics. Genetic basis of antibody diversity 4- Evaluating the importance of knowing structure and function of different immunoglobulins
3- Intended Learning Outcomes of Course (ILO's) By the end of this course, should be able to	
a-Knowledge and Understanding:	<ol style="list-style-type: none"> 1. Express what is meant by major histocompatibility complex 2. Summarize the structure of immunoglobulin 3. Describe the genetic basis of antibody diversity 4. Classify the difference between antibody affinity and avidity
b- Intellectual skills:	<ol style="list-style-type: none"> 1. Analyze the structure of an immunoglobulin, major histocompatibility complex gene 2. Interpret the V and C regions 3. Compare the structure of immunoglobulin G and M 4. Interpret the function of immunoglobulin G and M
c- Professional Skills:	<ol style="list-style-type: none"> 1. Measure how lymphocyte produce antibodies, what are the binding forces 2. Adjust the genetic basis of antibody diversity 3. Execute the structure of immunoglobulin G and M 4. Calculate the activation of B-lymphocytes



d- General and Transferable Skills

1. Work in team
2. Use internet
3. Communicate with others
4. Show administrative skills

4-Contents:

Week No.	Topic
1	Antibody structure and function overview
2	Antibody genetics. Genetic basis of antibody diversity
3	Generation of antibody diversity and heterogeneity. Antibody affinity and avidity
4	The three dimensional structure of immunoglobulins (light, heavy, constant and variable)
5	Immunity mediated by antibody, cross reactivity and binding forces
6	Advances in Ag-Ab reactions
7	Monoclonal antibodies

5-Teaching and Learning Methods

- 1-Lectures
- 2-Power point presentations
- 3-Internet search and assignments
- 4-Paper presentation
- 5-Group discussion

6-Teaching and Learning Methods (for students with special needs)

Not applied



7- Student Assessment:

a. Assessment Methods:	* Semester works, * Midterm exam, * Oral Exam, * Written (final) exam.
b. Assessment Schedule	* (5 th & 10 th weeks), 6 th week 14 th week 15 th week
c. Weighting of Assessment	10 degrees ratios 10%, 10 degrees ratios 10%, 20 degrees ratios 20%, 60 degrees ratios 60%, Total 100 degrees ratios 100%

8-List of References:

a-Notes	Basic immunology Third edition Abul K. Abbas
b-Essential Books (Text Books)	Basic and clinical immunology Daniel P Stites, sixth edition
c- Suggested Books	Basic immunology, third edition .Abul K.Abbas
d Periodicals, Web Sites, ... etc ...	

Course coordinator: Dr. Randa Mohamed Talaat

Head of the department council: Prof. Dr. Randa Mohamed Talaat



Course Matrix

Week No.	Topic	Knowledge and Understanding a	Intellectual skills b	Practical and Professional Skills c	General and Transferable Skills d
1,2	Antibody structure and function overview	1	1	1	1
3,4	Antibody genetics.Genetic basis of antibody diversity		2	2	2
5,6	Generation of antibody diversity and heterogeneity.Antibody affinity and avidity	2, 3	-	2	2
7,8	The three dimensional structure of immunoglobulins(light, heavy,constant and variable)	4	1	3	3
9,10	Immunity mediated by antibody,cross reactivity and binding forces	-	3	-	4
11,12	Advances in Ag-Ab reactions	-	4	4	2
13,14	Monoclonal antibodies	4	-	-	3

Course coordinator: Dr. Randa Mohamed Talaat

Head of the department council: Prof. Dr. Randa Mohamed Talaat



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Department: Molecular Diagnostics and Therapeutics

Course Specifications

18. Course information:							
Course Code:	B7-4	Course Title:	Biology of cancer				
No. units	3	Lec.	3	App.	-	Level	Master
Department	Molecular Diagnostics and Therapeutics						

19. Course Aims	
	1-know and understand all about Oncogenes 2-The difference between malignant and benign tumors. 3-Classification of cancer according to cell tissue of origin

20. Intended Learning Outcomes of Course (ILO's)	
i. Knowledge and Understanding:	1Express the classification of cancer according to cell tissue origin 2Summarize the difference between benign and malignant tumors 3Classify and describe oncogenes 4Describe the role of tumor suppressor genes, and P53
j. Intellectual skills:	1Analyze the role of tumor suppressor genes 2Plan to describe the BRCA1 and BRCA2 3 Compare between malignant and benign tumors 4Interpret the steps of cancer angiogenesis
k. Professional Skills of course:	1 Apply the importance of BRCA1 and BRCA2 genes 2 Measure the factors which limit antitumor immune response 3 Form an estimation about importance of P53, and tumor



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	suppressor genes 4 Adjust the steps of cancer angiogenesis
I. General and Transferable Skills	1 work in team 2 Use internet 3 Communicate with others 4 Show administrative skills

21. Course Contents:	
No.	Topic
1	Introduction to course & Cell cycle regulation and Growth factors & Cancer signal transduction
2	Phenotypic characteristics of cancer cells & Clinical features of the cancer
3	Carcinogenesis (chemical, viral, and radiation & etc)
4	Cancer angiogenesis
5	Cancer invasion & metastasis
6	Cancer genetics
7	Tumor suppressor genes, Oncogenes & Apoptosis

22. Teaching and Learning Methods	
	- Lectures. - Power point presentations. - Internet search and assignments. - Paper presentations and group discussions.

23. Teaching and Learning Methods (for students with special needs)	Not applied
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24. Student Assessment:	
d. Assessment Methods:	* Semester Works * Midterm Exam * Oral Exam * Written (Final) Exam



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e. Assessment Schedule	* (5 th & 10 th weeks), * (6 th) Week, * (14 th) Week, * (15 th) Week.		
f. Weighting of Assessments	10 degrees	ratios	10 %
	10 degrees	ratios	10 %
	20 degrees	ratios	20 %
	60 degrees	ratios	60 %
	Total 100 degrees	ratios	100%

25. List of References:	
g. Notes	- Lecture Notes
h. Essential Books (Text Books)	-Cellular and Molecular Immunology, Abul K. Abbas MBBS, Andrew H. Lichtman MD PhD and Shiv Pillai MD (May 23, 2011).
i. Suggested Books	Immunology, by Thao Doan MD, Roger Melvold, Susan Viselli PhD and Carl Waltenbaugh PhD (Jul 5, 2007).
j. Periodicals, Web Sites, ... etc ...	-

Course coordinator: Dr. Randa Mohamed Talaat

Head of the department council: Prof. Dr. Randa Mohamed Talaat



Course Matrix

Week No.	Topic	Knowledge and Understanding a	Intellectual skills b	Professional Skills of course c	General and Transferable Skills d
1,2	Introduction to course & Cell cycle regulation and Growth factors & Cancer signal transduction	2	3	1	1
3,4	Phenotypic characteristics of cancer cells & Clinical features of the cancer	3, 4	1	2	2
5,6	Carcinogenesis (chemical, viral, and radiation &ect)	1	-	1, 3	3
7,8	Cancer angiogenesis	-	4	4	2
9,10	Cancer invasion & metastasis	4	2	1	4
11,12	Cancer genetics	-	-	2, 3	3
13,14	Tumor suppressor genes, Oncogenes & Apoptosis	2	-	-	1

Course coordinator: Dr. Randa Mohamed Talaat

Head of the department council: Prof. Dr. Randa Mohamed Talaat



Department: **Molecular Diagnostics and Therapeutics**

Course Specifications

1. Course information:							
Course Code:	B7- 5	Course Title:	Cancer at the genetic level				
No. units	3	Lect.	3	App.	-	Level	Master
Department	Molecular Diagnostics and Therapeutics						

2. Course Aims	
	<ul style="list-style-type: none"> ■ To develop a broad spectrum of knowledge and understanding of the genetics, epigenetics and the molecular mechanisms that contribute to the complex set of diseases called cancer. ■ To clarify cellular processes in relation to cancer. ■ To enable the student to comprehend different mechanisms of oncogenesis.

3. Intended Learning Outcomes of Course (ILO's)	
a. Knowledge and Understanding	1- Express an overview on cell cycle, cell cycle control, DNA damage response, chromosomal aberrations and epigenetic factors in relation to cancer. 2- List different mechanisms leading to oncogenesis and carcinogenesis. 3- Summarize some of the signaling pathways defective in cancer, and the role of epigenetics in cancer development.
b. Intellectual skills	1- Analyze steps in cancer development. 2- Compare between oncogenesis, tumor suppressor gene defects and epigenetic factors in different types of cancer.
c. Professional Skills of the course:	1- Read Write and plan research in the field of the genetics of cancer. 2- Apply concepts of genetics to reveal the origin of some cancers. 3- Apply pilot studies in the field of cancer genetics in the process of preparing for projects.



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d. General and Transferable Skills	1- Use information communication technology to improve his/he professional practice in internet based searches. 2- Practice self-appraisal and determines his/her learning needs. 3- Use different sources of information to obtain data in the field of cancer genetics. 4- Use educational technology displaying devices for explain important modern techniques of presentation in. 5- Manage time effectively & work in teams. 6- Show Work effectively in teamwork.
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4. Course Contents:	
No.	Topic
1	Cell Cycle and Cell Cycle Check Points
2	Genetic Instability and cancer
3	DNA-Damage Response and DNA Repair systems
4	Oncogenes and oncogenesis: Molecular Approach
5	Tumor Suppressor Genes: Molecular Approach
6	Epigenetics and cancer epigenetics
7	Signaling pathways in cancer

5. Teaching and Learning Methods	
	Lectures. Class activities Discussions Presentations Reports

6. Teaching and Learning Methods (for students with special needs)	Not applicable
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7. Student Assessment:	
a. Assessment Methods:	* Semester Works * Midterm Exam * Oral Exam * Written (Final) Exam



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b. Assessment Schedule	* (5 th & 10 th weeks), * (6 th) Week, * (14 th) Week, * (15 th) Week.		
c. Weighting of Assessments	10 degrees	ratios	10 %
	10 degrees	ratios	10 %
	20 degrees	ratios	20%
	60 degrees	ratios	60 %
	Total 100 degrees	ratios	100%

8. List of References:

a. Notes	-----
b. Essential Books (Text Books)	<ul style="list-style-type: none"> The Cell: A Molecular Approach 4th Ed. By Geoffrey Cooper 2007 (Chapters: 16-17-18) The Cell Cycle: Principles of control by David Morgan 2007 (Chapters: 1-3-10-11-12) Molecular Biology of Human Cancer by Wolfgang Arthur Schulz 2005 (Chapter 8)
c. Suggested Books	
d. Periodicals, Web Sites, ... etc.	http://www.new-science-press.com/browse/cellcycle/resources http://www.sinauer.com www.cellsignal.com/reference/pathway/index.html www.biocarta.com/genes/CellSignaling.asp cebp.aacrjournals.org/cgi/content/abstract/10/12/1307 www.anaesthetist.com/physiol/basics/metabol/cyp/cyp.htm

Course coordinator:

Dr. Manal Osama El Hamshary

Head of the department council:

Prof. Dr. Randa M. Talaat



Course Matrix

Wk. No.	Course topic	Knowledge and understanding a	Intellectual abilities b	Professional skills c	General and transferable skills d
1,2	Cell Cycle, Cell Cycle Check Points	1	-	1,2	
3,4	DNA-Damage Response and DNA Repair systems	1	-	1,2	1,2,3,4,5,6
5,6	Genetic Instability	1	1	1,2	1,2,3,4,5,6
7,8	Oncogenes and oncogenesis: Molecular Approach	1,2	1,2	1,2,3	1,2,3,4,5,6
9,10	Tumor Suppressor Genes: Molecular Approach	1,2	1,2	1,2,3	1,2,3,4,5,6
11,12	Epigenetics and Cancer epigenetics	3	1,2	1,2,3	1,2,3,4,5,6
13,14	Signaling pathways in cancer	3	1	1,2,3	1,2,3,4,5,6

Course coordinator:

Dr. Manal Osama El Hamshary

Head of the department council:

Prof. Randa M. Talaat



Department: Molecular Diagnostics and Therapeutics

Course Specifications

1. Course information:							
Course Code:	B7-8	Course Title:	Clinical immunology				
No. units	3	Lec.	3	App.	-	Level	Master
Department	Molecular Diagnostics and Therapeutics						

2- Course Aims:	1-The aim of the course is understanding the essential basis of immunology 2- Describing what is meant by autoimmune diseases 3- Summarizing the types of hypersensitivity 4- Analyzing some aetiological causes of tumors
3- Intended Learning Outcomes of Course (ILO's)	
a-Knowledge and Understanding:	1. Summarize what is meant by adaptive and innate immunity 2. Describe types of hypersensitivity 3. Interpret types of immune-deficiencies 4. Describe tumor oncogenes
b- Intellectual skills:	1. Plan to make students understand types of hypersensitivity reactions 2. Analyze and explain what is primary and secondary immunodeficiency 3. Interpret autoimmune diseases 4. Compare and contrast immune responses against tumor and transplants
c- Professional Skills:	1. Measure therapy and vaccination strategies 2. Analyze and review immediate hypersensitivity syndromes and therapy 3. Form and understand diseases caused by T-lymphocytes syndrome and therapy 4. Measure diseases caused by antibodies and antigen antibody complexes syndromes and therapy
d- General and Transferable Skills	1. Work in team 2. Communicate with others 3. Use internet 4. Appear self- learning abilities



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4-Contents:

Week No.	Topic
1	The immune system, characters of antigens, characters of antibodies
2	Diseases caused by antibodies and antigen-antibody complexes
3	Types of hypersensitivity, and explain the mechanism of each
4	Division of immunodeficiency diseases into primary and secondary
5	Tolerance, and its role of autoimmune diseases
6	Causes of tumors and what is meant by tumor immunology
7	Revision, and discussion

5-Teaching and Learning Methods

- 1-Lectures
- 2-Power point presentations
- 3-Internet search and assignments
- 4-Paper presentation
- 5-Group discussion

6-Teaching and Learning Methods (for students with special needs)

NA

7- Student Assessment:

a. Assessment Methods:	* Semester works, * Midterm exam, * Oral Exam, * Written (final) exam.
b. Assessment Schedule	(5 th &10 th weeks), 6 th week 14 th week 15 th week
c. Weighting of Assessment	10 degrees ratios 10%, 10 degrees ratios 10%, 20 degrees ratios 20%, 60 degrees ratios 60% Total 100 degrees ratios 100%

List of References:

a-Notes

Basic immunology Third edition Abul K.Abbas



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b-Essential Books (Text Books)	Basic and clinical immunology Daniel P Stites, sixth edition
c- Suggested Books	Basic immunology, third edition .Abul K.Abbas
d Periodicals, Web Sites, ... etc ...	-

Course coordinator: Dr. Randa Mohamed Talaat

Head of the department council: Dr. Randa Mohamed Talaat



Course Matrix

Week No.	Topic	Knowledge and Understanding a	Intellectual skills b	Professional Skills of course c	General and Transferable Skills d
1,2	The immune system, characters of antigens, characters of antibodies	2	3	1	1
3,4	Diseases caused by antibodies and antigen-antibody complexes	3, 4	1	2	2
5,6	Types of hypersensitivity, and explain the mechanism of each	1	-	1, 3	3
7,8	Division of immunodeficiency diseases into primary and secondary	-	4	4	2
9,10	Tolerance, and its role of autoimmune diseases	4	2	1	4
11,12	Causes of tumors and what is meant by tumor immunology	-	-	2, 3	3
13,14	Revision and discussion	3	1	-	4

Course coordinator: Dr. Randa Mohamed Talaat

Head of department council: Prof. Dr. Randa Mohamed Talaat



Department: Molecular Diagnostics and Therapeutics

Course Specifications

26. Course information:							
Course Code:	B7-9	Course Title:	Comparative haematology-1				
No. units	3	Lec.	3	App.	-	Level	Master
Department	Molecular Diagnostics and Therapeutics						

2- Course Aims:	1- Summarize and understand the erythrocyte; leukocytes and platelets functions and normal parameters to each. 2- Understand the different classifications of anemia 3- Explaining the coagulation and coagulopathies 27. Interpreting the abnormal findings of CBCs
3- Intended Learning Outcomes of Course (ILO's) By the end of this course, student should be able to:	
a-Knowledge and Understanding:	1. Summarize the picture of a normal blood picture 2. Describe the process of normal hematopoiesis 3. Define anemia, clinical signs, and types of anemia 4. Summarize the process of coagulation; coagulopathies; role of fibrinolytic system
b- Intellectual skills:	1. Interpret what is anemia 2. Compare anemia according to the size of RBC, to haemoglobin contents 3. Analyze causes and clinical pictures of megaloblastic and iron deficiency anemia 4. Analyze causes and clinical picture of coagulopathies



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c- Professional Skills:	<ol style="list-style-type: none"> 1. Interpret the parameters of a normal blood film 2. Calculate and comment in a normal or abnormal blood film seen under the microscope 3. Measure and explain different types coagulation study 4. Form how to proceed in diagnosis of a case of leukemia
d- General and Transferable Skills	<ol style="list-style-type: none"> 1. Show independent learning abilities and skills for continuing professional development 2. Work in team 3. Use internet 4. Communicate with others

4-Contents:

No.	Topic
1	Discuss the normal hematopoiesis ; site of blood formation; and normal items of CBC
2	Define anemia; list its classifications ;and discuss the deficiency type of anemia
3	Enumerate type of congenital and hereditary anemia ; discuss the main types ; define and discuss the aplastic and anemia of chronic disorders
4	Mid-term exam. Summarization what is meant by hemostasis (role of platelets ; blood vessels and coagulation factors)
5	Normal anticoagulation and fibrinolysis system
6	Physiological and pathological variation in WBC
7	Seminar and group discussion.

28. Teaching and Learning Methods



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	<ul style="list-style-type: none"> - Lectures. - Power point presentations. - Internet search and assignments. - Paper presentations and group discussions.
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29. Teaching and Learning Methods (for students with special needs)	Not applied
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30. Student Assessment:			
g. Assessment Methods:	* Semester Works * Midterm Exam * Oral Exam * Written (Final) Exam		
h. Assessment Schedule	* (5 th &10 th weeks), * (6 th) Week, * (14 th) Week, * (15 th) Week.		
i. Weighting of Assessments	10 degrees	ratios	10 %
	10 degrees	ratios	10 %
	20 degrees	ratios	20 %
	60 degrees	ratios	60 %
	Total 100 degrees	ratios	100%

31. List of References:	
k. Notes	- Lecture Notes
l. Essential Books (Text Books)	-Essential Haematology, by Victor Hoffbrand and Paul Moss (2011)
m. Suggested Books	-Comparative clinical haematology, by R.K. & L.B. Jeffcott. (editors) Archer (1977)
n. Periodicals, Web Sites, ... etc ...	www.cellsignal.com/reference/pathway/index.html



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	www.biocarta.com/genes/CellSignaling.asp
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Course coordinator: Dr. Randa Mohamed Talaat

Head of the department council: Prof. Dr. Randa M. Talaat

Course Matrix

Week No.	Topics	Knowledge and Understanding a	Intellectual skills b	Practical and Professional Skills c	General and Transferable Skills d
1,2	Discuss the normal hematopoiesis ; site of blood formation; and normal items of CBC	1	-	1	1
3,4	Define anemia; list its classifications ;and discuss the deficiency type of anemia	2	1	-	2
5,6	Enumerate type of congenital and hereditary anemia ; discuss the main types ; define and discuss the aplastic and anemia of chronic disorders	2	-	2	2
7,8	Summarization what is meant by hemostasis (role of platelets ; blood vessels and coagulation factors)	4	2	2	3
9,10	Normal anticoagulation and fibrinolysis system	3	3,4	2	4
11,12	Physiological and pathological variation in WBC	4	2	2	2
13,14	Seminar and group discussion.	-	-	-	2,3,4

Course coordinator: Dr. Randa M. Talaat

Head of the department council: Prof. Dr. Randa M. Talaat



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University of Sadat City

Department: Molecular Diagnostics and Therapeutics

Course Specifications

32. Course information:							
Course Code:	B7-16	Course Title:	Heredity and human diversity				
No. units	3	Lec.	3	App.	-	Level	Master
Department	Molecular Diagnostics and Therapeutics						

33. Course Aims	
	<ul style="list-style-type: none">1- Help student to understand the various aspects of human genetics with emphasis on molecular genetics.2- Enable student to know about the different molecular mechanisms for pathology.3- Make the student oriented with the modern evolutionary synthesis and Mendelian genetic

34. Intended Learning Outcomes of Course (ILO's)	By the end of course, student should be able to:
m. Knowledge and Understanding:	<ul style="list-style-type: none">1- Express The description of a mode of biological inheritance2- Classify Involved chromosomes3- Summarize genotype–phenotype4- Describe environmental gene interactions5- Divide Sex-linked interactions6-Describe Locus–locus interactions :7- Express Molecular Pattern of the diseases mutation and polymorphism
n. Intellectual skills:	<ul style="list-style-type: none">1- Analyze the origins and inheritance patterns of a variety of heritable human disorder;2- Interpret the methodological approaches used in analysing



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	<p>the human genome;</p> <p>3- Derive techniques for making novel antibodies and developing new vaccines;</p> <p>4- Compare on aspects of the evolution of the human genome, including the origin and role of mitochondrial DNA</p>
o. Professional Skills of course:	<p>1- apply Cytogenetic & Fish technique</p> <p>2- apply Restriction endonucleases</p> <p>3- apply DNA ligase</p> <p>4- apply PCR</p> <p>5- Execute Plasmids</p> <p>6- apply Nucleic acid probe hybridization</p> <p>7- Apply Reverse transcriptase cDNA library construction</p> <p>8- apply Restriction fragment length polymorphism</p> <p>9- apply Gel Electrophoresis</p>
p. General and Transferable Skills	<p>1-Work in team</p> <p>2-Appear management skills</p> <p>3-Treat by Efficiency with Computer</p> <p>4-Use Internet</p> <p>5-Communicate with others</p> <p>6-Appear self-learning abilities</p> <p>7-Use Application of Computer in the Field of Interest</p>

35. Course Contents:	
No.	Topic
1	General introduction. Reviewing basic concepts of inheritance.
2	Organization of the human genome.
3	DNA variability, polymorphisms and mutations. Allelic variability, Genetic variability.
4	Genetic diseases
5	Genotype-phenotype correlations
6	Dynamic mutations. Genes with microsatellite repeats. History, biology and diseases.
7	Positional cloning: From disease to the gene.



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36. Teaching and Learning Methods	
	<ul style="list-style-type: none">- Lectures.- Power point presentations.- Internet search and assignments.- Paper presentations and group discussions.

37. Teaching and Learning Methods (for students with special needs)	Not applied
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38. Student Assessment:			
j. Assessment Methods:	* Semester Works * Midterm Exam * Oral Exam * Written (Final) Exam		
k. Assessment Schedule	* (5 th & 10 th weeks), * (6 th) Week, * (14 th) Week, * (15 th) Week.		
l. Weighting of Assessments	10 degrees	ratios	10 %
	10 degrees	ratios	10 %
	20 degrees	ratios	20 %
	60 degrees	ratios	60 %
	Total 100 degrees	ratios	100%

39. List of References:	
o. Notes	-Course notes shaalan's text book of pediatrics (For Free) Obtained copy from the institute library
p. Essential Books (Text Books)	-Nelson Text book of pediatrics
q. Suggested Books	-For far text book of pediatrics
r. Periodicals, Web Sites, ... etc	-Pediatrics clinic of North America
...	

Course coordinator: Dr Usama Fouad Shaalan

Head of the department council: Prof. Dr. Randa M. Talaat



Course Matrix

Week No.	Topic	Knowledge and Understanding a	Intellectual skills b	Practical and Professional Skills c	General and Transferable Skills d
1,2	General introduction. Reviewing basic concepts of inheritance.	1, 2	1	1, 5	1, 3
3, 4	Organization of the human genome.	3	2	2, 7	2
5, 6	DNA variability, polymorphisms and mutations. Allelic variability, Genetic variability.	4, 5	3	3, 4	2, 3
7, 8	Genetic diseases	3, 6, 7	1, 4	3, 6, 8	1, 4
9, 10	Genotype-phenotype correlations	4	3	1, 9	2, 5
11, 12	Dynamic mutations. Genes with microsatellite repeats. History, biology and diseases.	3, 5	4	2, 10, 11	1, 6
13, 14	Positional cloning: From disease to the gene.	5, 2	2	3, 4, 12	1, 7

Course coordinator: Dr Usama Fouad Shaalan

Head of the department council: Prof. Dr. Randa M. Talaat



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University of Sadat City

Department: Molecular Diagnostics and Therapeutics

Course Specifications

40. Course information:							
Course Code:	B7-17	Course Title:	Human bone marrow				
No. units	3	Lec.	3	App.	-	Level	Master
Department	Molecular diagnostics and therapeutics						

41. Course Aims	
	1- Explaining how to make bone marrow examination, 2- Knowing -its indications and interpretation 3-understand and interpret immunophenotyping 4- discussing the normal and abnormal bone marrow histology and its clinical impactions

42.Intended Learning Outcomes of Course (ILO's)	
q. Knowledge and Understanding:	1. Summarize the indications for bone marrow aspiration and biopsy 2. Describe to students how to examine bone marrow films 3. Express the role of CFU-GMM development in bone marrow 4. Classify indications of bone marrow aspiration for immunophenotyping
r. Intellectual skills:	1. Analyze CFU-GMM development in bone marrow 2. Interpret bone marrow histological sections (red and yellow) 3. Compare bone marrow hypoplasia and hyperplasia 4. Plan the role of bone marrow in treating cancer patients
s. Professional Skills of course:	1. Adjust a bone marrow film 2. Form a bone marrow report, evaluation of immunophenotyping 3. Apply and understand mechanism of bone marrow transplantation 4. Measure bone marrow transplantation in treating cancer



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t. General and Transferable Skills	<ol style="list-style-type: none"> 1. Work in team 2. Use internet 3. Communicate with others 4. Show administration skills

43. Course Contents:	
No.	Topic
1	Description of a normal blood picture, and explanation of its normal values
2	Types of bone marrow, difference between bone marrow aspiration and biopsy
3	Comparison between bone marrow aplasia, hypoplasia, and hyperplasia
4	Describe the cellular constitution of red bone marrow
5	Indications of bone marrow aspiration
6	Immunophenotyping
7	Summarize role of bone marrow transplantation in treating cancer patients

44. Teaching and Learning Methods	
	<ol style="list-style-type: none"> 1-Lectures 2-Power point presentations 3-Internet search and assignments 4-Paper presentation 5-Group discussion

45. Teaching and Learning Methods (for students with special needs)	Not applicable
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46. Student Assessment:	
m. Assessment Methods:	<ul style="list-style-type: none"> *Semester works, *Midterm exam, *Oral exam, *Written (Final) exam.
n. Assessment Schedule	<ul style="list-style-type: none"> * (5th&10th weeks), * (6th) Week, * (14th) Week, * (15th) Week.



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o. Weighting of Assessments	10 degrees	ratios	10%,
	10 degrees	ratios	10%,
	20 degrees	ratios	20 %,
	60 degrees	ratios	60%
	Total 100 degrees	ratios	100%

47. List of References:	
s. Notes	
t. Essential Books (Text Books)	Mosbys, manual of diagnostic and laboratory test, third edition
u. Suggested books	Clinical chemistry, mosby, fourth edition
v. Periodicals, Web Sites, ... etc ...	http://www.new-science-press.com/browse/cellcycle/resources http://www.sinauer.com

Course coordinator:

Dr. Randa Mohamed Talaat

Head of the department council:

Prof. Dr. Randa Mohamed Talaat



Course Matrix

Week No.	Topic	Knowledge and Understanding a	Intellectual skills b	Practical and Professional Skills c	General and Transferable Skills d
1,2	Description of a normal blood picture, and explanation of its normal values	1	-	1	1
3,4	Types of bone marrow, difference between bone marrow aspiration and biopsy	2, 3	2	-	2
5,6	Comparison between bone marrow aplasia, hypoplasia, and hyperplasia	2	3	-	3
7,8	Describe the cellular constitution of red bone marrow	3	2	-	1
9,10	Indications of bone marrow aspiration	1	1, 2	-	1
11,12	Immunophenotyping	4	-	2	1
13,14	Summarize role of bone marrow transplantation in treating cancer patients	-	4	3, 4	1, 4

Course coordination: Dr. Randa Mohamed Talaat

Head of department council: Prof. Dr. Randa Mohamed Talaat



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Department: Molecular Diagnostics and Therapeutics

Course Specifications

48. Course information:							
Course Code:	B7-18	Course Title:	Human cancer				
No. units	3	Lec.	3	App.	-	Level	Master
Department	Molecular Diagnostics and Therapeutics						

49. Course Aims	
	<ul style="list-style-type: none">1- Enable student to understand what is cancer and oncogens.2- Help student to learn about the different causes of cancer.3- Familiarize student with the different trends in cancer diagnosis.4- Make student oriented with the new approaches of cancer therapy.

50. Intended Learning Outcomes of Course (ILO's)	By the end of course, student should be able to:
u. Knowledge and Understanding:	<ul style="list-style-type: none">1- Express the relationships between cell biology and the basis of cancer.2- Describe the control mechanisms of cell division, cell differentiation and cell signaling.3- Describe concepts in carcinogenesis and of current therapeutic strategies for management4- Summarize Cancer as a Disease: natural history of cancer development5- Classify Carcinogenesis, cancer initiation, promotion, & progression6- Describe Cancer Genes I: oncogenes and signal transduction7- Summarize Cellular proto-oncogenes, oncogene activation



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v. Intellectual skills:	1- Analyze and understanding of the diagnosis and treatment of cancer in general and 2- Interpret of the systemic adverse effects of cancer treatments 3- Analyze the common sites and signs and symptoms of metastasis. 4- Compare an evaluation and develop an intervention program for the method of investigations of cancer 5- Interpret therapies from laboratory to clinic 6- Derive Gene discovery in cancer research, B6-cancer genome anatomy project 7- Derive cancer immunity and strategies of anticancer immunotherapy
w. Professional skills of the course:	1 Measure Describe growth factors, growth factor receptors, signal transduction and Transcription factors 2- Adjust and Understand the relationships between cell biology and the basis of cancer. 3- Execute DNA viruses/cell immortalization 4 Measure Genomic instability
x. General and Transferable Skills:	1-Work in team 2-Appear management skills 3-Treat by Efficiency with Computer 4-Use Internet 5-Communicate with others 6-Appear self-learning abilities 7-Use Application of Computer in the Field of Interest

51. Course Contents:	
No.	Topic
1	1- Course Information.
2	2- Cell biology
3	3- Control of the cell cycle and DNA repair
4	4- Adhesion molecules. Components of the extracellular matrix.
5	5- Molecular techniques for diagnosis.



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6	6- Characteristics of cancer cells
7	7- Oncogenes and tumor suppressor genes

52. Teaching and Learning Methods	
	<ul style="list-style-type: none"> - Lectures. - Power point presentations. - Internet search and assignments. - Paper presentations and group discussions.

53. Teaching and Learning Methods (for students with special needs)	Not applied
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54. Student Assessment:			
p. Assessment Methods:	* Semester Works * Midterm Exam * Oral Exam * Written (Final) Exam		
q. Assessment Schedule	* (5 th &10 th weeks), * (6 th) Week, * (14 th) Week, * (15 th) Week.		
r. Weighting of Assessments	10 degrees	ratios	10 %
	10 degrees	ratios	10 %
	20 degrees	ratios	20 %
	60 degrees	ratios	60 %
	Total 100 degrees	ratios	100%

55. List of References:	
w. Notes	-Course notes shaalan's text book of pediatrics (For Free) Obtained copy from the institute library
x. Essential Books (Text Books)	-Nelson Text book of pediatrics



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y. Suggested Books	-For far text book of pediatrics
z. Periodicals, Web Sites, ... etc ...	-Pediatrics clinic of North America

Course coordinator: Dr Usama Fouad Shaalan

Head of the department council: Prof. Dr. Randa M. Talaat

Course Matrix

Week No.	Topic	Knowledge and Understanding a	Intellectual skills b	Professional Skills c	General and Transferable Skills d
1,2	1- Course Information.	1	1	1	1
3, 4	2- Cell biology	2	2	2	2
5, 6	3- Control of the cell cycle and DNA repair	3	3	3	3
7, 8	4- Adhesion molecules. Components of the extracellular matrix.	4	4	4	4
9, 10	5- Molecular techniques for diagnosis.	5	5	-	5
11, 12	6- Characteristics of cancer cells	6	6	-	6
13, 14	7- Oncogenes and tumor suppressor genes	7	7	-	7

Course coordinator: Dr Usama Fouad Shaalan

Head of the department council: Prof. Dr. Randa M. Talaat



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Department: Molecular Diagnostics and Therapeutics

Course Specifications

56. Course information:							
Course Code:	B7-20	Course Title:	Human Genetics I				
No. units	3	Lec.	3	App.	-	Level	Master
Department	N.A (General course)						

57. Course Aims	
	The course provides the students with basic knowledge to human genetics, terminology, cell division, chromosomes, mode of inheritance, cytogenetics and basics of genetic testing.

58. Intended Learning Outcomes of Course (ILO's)	
y. Knowledge and Understanding:	1- Express some terminology in human genetics, some definitions and naming of normal and abnormal chromosomal complement of some diseases. 2- Summarize types of cell division, different modes of inheritance, human chromosomes and some types of genetic testing.
z. Intellectual skills:	1- Link between different fields in human genetics. 2- Interpret chromosome complement and abnormalities. 3- Find the appropriate genetic test to confirm the disease.
aa. Professional Skills	1- Prepare research and research plan in human genetics. 2- Select the suitable genetic test to confirm the disease..
bb. General and Transferable Skills	1- Communicate effectively using all methods with public, colleagues and appropriate authorities. 2- Use information communication technology to improve his/her professional practice in internet and relative information of human cell biology. 3- Use different sources of information to obtain data for a given human cell biology course topics. 4- Use educational technology displaying devices for explain important frames in human cell biology.



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	5- Manage time effectively & work in teams.
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59. Course Contents:	
No.	Topics
1	Definitions of Biochemical genetics, behavioral genetics, medical genetics, population genetics, genetic epidemiology and terminology
2	Meiosis, Mitosis and gametogenesis
3	Human chromosomes
4	Modes of inheritance: Mendelian inheritance
5	Modes of inheritance: Non-mendelian inheritance
6	Cytogenetics and chromosome abnormalities
7	Cytogenetics, Molecular cytogenetics and molecular testing

60. Teaching and Learning Methods	
	Lectures Class activities Discussion Presentation Reports

61. Teaching and Learning Methods (for students with special needs)	Not applied
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62. Student Assessment:											
s. Assessment Methods:	<ul style="list-style-type: none"> - work on team - Midterm - Oral - Written 										
t. Assessment Schedule	-Semester Works (5 th &10 th) -Midterm Exam (6 th) Week -Oral Exam (14 th) Week -Written (Final) Exam (15 th) Week.										
u. Weighting of Assessments	<table> <tr> <td>Degrees</td><td>%</td></tr> <tr> <td>-10</td><td>10%</td></tr> <tr> <td>-10</td><td>10%</td></tr> <tr> <td>-20</td><td>20%</td></tr> <tr> <td>-60</td><td>60%</td></tr> </table>	Degrees	%	-10	10%	-10	10%	-20	20%	-60	60%
Degrees	%										
-10	10%										
-10	10%										
-20	20%										
-60	60%										



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	Total=100	100%
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63. List of References:	
aa. Notes	-Shaalán Notes
bb. Essential Books (Text Books)	Human Genetics by Vogle
cc. Suggested Books	-Forfarr
dd. Periodicals, Web Sites, ... etc ...	

Course coordinator: Dr. Usama Fouad Shaalan

Head of the department council: : Prof. Dr. Randa M. Talaat



Course Matrix

Course Contents	Week No.	Knowledge and Understanding a	Intellectual skills b	Professional Skills c	General and Transferable Skills d
Definitions of Biochemical genetics, behavioral genetics, medical genetics, population genetics, genetic epidemiology and terminology	1&2	1	1	1	1,2,3,4,5
Meiosis, Mitosis and gametogenesis	3&4	2	-	1	-
Human chromosomes	5&6	2	-	1	-
Modes of inheritance: Mendelian inheritance	7&8	1	-	1	-
Modes of inheritance: Non-mendelian inheritance	9&10	2	-	1	-
Cytogenetics and chromosome abnormalities	11&12	1,2	2,3	2	1,2,3,4,5
Cytogenetics, Molecular cytogenetics and molecular testing	13&14	2	3	2	1,2,3,4,5

Course Coordinator: Dr.Usama Fouad Shalaan

Head of Department: Prof. Randa M. Talaat



Department: Molecular Diagnostics and Therapeutics

Course Specifications

1. Course information:							
Course Code:	B7-22	Course Title:	Human physiology				
No. units	3	Lec.	3	App.	-	Level	Master
Department	Molecular Diagnostics and Therapeutics						

2- Course Aims:

The aim of the course is to know and understand
1-Know what is cell physiology and homeostasis
2- Understand the definition; structure and function of body systems.
3-studying the normal genetics and mode of inheritance and its physiologic implications

3- Intended Learning Outcomes of Course (ILO's)

a-Knowledge and Understanding:

1. Express what is meant by haemostasis
2. Summarize the cell physiology
3. Describe genetics, and inheritance
4. Classify blood physiology

b- Intellectual skills:

1. Analyze the cell physiology
2. Plan to know blood physiology
3. Compare genetics and inheritance
4. Interpret what is meant by senses

c- Professional Skills:

1. Apply cell physiology in respiratory system
2. Measure the physiology of blood system
3. Form interquementary system
4. Adjust different senses



d- General and Transferable Skills	1. work in team 2. Use internet 3. Communicate with others 4. Show administrative skills
4-Contents:	
No.	Topic
1	The cell physiology ; biology and cell organelles
2	The concept of homeostasis
3	List the main body systems and discuss in briefly neurophysiology ; musculoskeletal and cardiovascular physiology
4	Mid Term Exam Discuss in brief gastro-physiology ; reproductive and renal physiology
5	Blood and endocrine physiology
6	Genetics and inheritance and environmental physiology
7	Discussion and poster presentation
5-Teaching and Learning Methods	1-Lectures 2-Power point presentations 3-Internet search and assignments 4-Paper presentation 5-Group discussion
6-Teaching and Learning Methods (for students with special needs)	NA



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7- Student Assessment:

a. Assessment Methods:	* Semester works, * Midterm exam, * Oral Exam, * Written (final) exam.		
b. Assessment Schedule	* (5 th &10 th weeks), * (6 th week) * (14 th week * (15 th week).		
c. Weighting of Assessment	10 degrees	ratios	10%,
	10 degrees	ratios	10%,
	20 degrees	ratios	20%,
	60 degrees	ratios	60%
	Total 100 degrees	ratios	100%

List of References:

a-Notes

Lectures notes



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b-Essential Books (Text Books)	Human Physiology: An Integrated Approach, by William C, Ober, Claire W. Garrison, Andrew C. Silverthorn and Dee Unglaub Silverthorn (2000)
c- Suggested Books	Vander's Human Physiology by, Eric P. Widmaier , Hershel Raff and Kevin T. Strang (2010)
d Periodicals, Web Sites, ... etc ...	-

Course coordination: Dr. Randa M. Talaat

Head of department council: Prof. Dr. Randa M. Talaat



Course Matrix

Week No.	Topic	Knowledge and Understanding a	Intellectual skills b	Professional Skills of course c	General and Transferable Skills d
1,2	The cell physiology ; biology and cell organelles	2	-	1	-
3,4	The concept of homeostasis	2	-	1	1
5,6	List the main body systems and discuss in briefly neurophysiology ; musculoskeletal and cardiovascular physiology	1	4	-	2
7,8	Discuss in brief gastro-physiology ; reproductive and renal physiology	-	1	-	2
9,10	Blood and endocrine physiology	3	2	2	3
11,12	Genetics and inheritance and environmental physiology	4	3	3, 4	1
13,14	Discussion and poster presentation				2, 3, 4

Course coordinator: Dr. Randa M. Talaat

Head of department council: Prof. Dr. Randa M. Talaat



Department: Molecular Diagnostics and Therapeutics

Course Specifications

2. Course information:							
Course Code:	B7-23	Course Title:	Immunoassays				
No. units	3	Lec.	3	App.	-	Level	Master
Department	Molecular Diagnostics and Therapeutics						

3. Course Aims	
	<p>1-Understand the fundamentals of immunology, structure and function of related molecules, and principles of immunological interactions.</p> <p>2-Provide a broad knowledge about different methods used in immunoassays and biosafety in related laboratories.</p>

4. Intended Learning Outcomes of Course (ILO's)	By the end of course, student should be able to:
cc.Knowledge and Understanding:	<p>1- Classify the serological reactions between antigen and antibody</p> <p>2- Summarize the steps for using serum protein electrophoresis, lipid electrophoresis</p> <p>3-Describe PCR, RT-PCR, flow cytometry, and how they are used in molecular diagnostics and immunophenotyping.</p> <p>4- Express the principles of biosafety measures in molecular biology and immunology laboratories.</p>
dd. Intellectual skills:	<p>1- Analyze the concept of each assay</p> <p>2- Compare the mechanism by which each assay is used</p> <p>3- Interpret the different assays, and how to apply each assay</p> <p>4- Interpret the importance of flow cytometry, protein electrophoresis, and PCR.</p>
ee.Professional Skills of course:	<p>1- Apply flow cytometry, electrophoresis and PCR techniques</p> <p>2- Adjust ,when and how to apply each assay</p> <p>3- Form the application of different assays with the interpretation of results</p> <p>4- Apply the suitable biosafety measures when using each</p>



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	method
ff. General and Transferable Skills	1- work in team 2- Use internet 3- Communicate with others 4 -Show administrative skills

5. Course Contents:	
No.	Topic
1	Summarize some basis of immunology, structure/function relationship and some immunological interactions
2	Classify electrophoresis, and interpret each type
3	Describe the concept of flow cytometry
4	Describe ELISA ,its types and its applications
5	Summarize the PCR technique, and its applications
6	Describe RT-PCR
7	Biosafety measures in immunology and molecular biology laboratories

6. Teaching and Learning Methods	
	<ul style="list-style-type: none"> - Lectures. - Power point presentations. - Internet search and assignments. - Paper presentations and group discussions.

7. Teaching and Learning Methods (for students with special needs)	Not applied
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8. Student Assessment:	
v. Assessment Methods:	<ul style="list-style-type: none"> - Oral Exam to assess general and transferable skills, intellectual skills, understanding & knowledge. - Written Exam..... to assess intellectual skills, understanding & knowledge.



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	- Practical Exam.... to assess practical skills.												
w. Assessment Schedule	- Semester Works (5 th &10 th) - Midterm Exam (6 th) Week - Oral Exam (14 th) Week - Written (Final) Exam (15 th) Week.												
x. Weighting of Assessments	<table><tr><td>Degrees</td><td>%</td></tr><tr><td>-10</td><td>10%</td></tr><tr><td>-10</td><td>10%</td></tr><tr><td>-20</td><td>20%</td></tr><tr><td>-60</td><td>60%</td></tr><tr><td>Total=100</td><td>100%</td></tr></table>	Degrees	%	-10	10%	-10	10%	-20	20%	-60	60%	Total=100	100%
Degrees	%												
-10	10%												
-10	10%												
-20	20%												
-60	60%												
Total=100	100%												

9. List of References:	
ee. Notes	
ff. Essential Books (Text Books)	Roitt's Essential Immunology;Publisher: Wiley-Blackwell; 12 edition (May 6, 2011);ISBN-10: 1405196831; ISBN-13: 978-1405196833
gg. Suggested Books	Immunoassays: A Practical Approach Publication Date: August 15, 2000 ISBN-10: 0199637113 ISBN-13: 978-0199637119
hh. Periodicals, Web Sites, ... etc ...	

Course coordinator: Dr. Randa M. Talaat

Head of the department council: Prof. Dr. Randa M. Talaat



Course Matrix

Week No.	Topic	Knowledge and Understanding a	Intellectual skills b	Practical and Professional Skills c	General and Transferable Skills d
1,2	Summarize some basis of immunology, structure/function relationship and some immunological interactions	1	-	-	2, 3
3,4	Classify electrophoresis, and interpret each type	2	1, 2, 3, 4	1, 2, 3	1, 2, 3
5,6	Describe the concept of flowcytometry	3	1, 2, 3, 4	1, 2, 3	1, 2, 3
7,8	Describe ELISA ,its types and its applications	3	1, 2, 3, 4	2, 3	1, 2, 3
9,10	Summarize the PCR technique, and its applications	3	1, 2, 3, 4	1, 2, 3	1, 2, 3
11,12	Describe RT-PCR	3	1, 2, 3, 4,	1, 2, 3	1, 2, 3
13,14	Biosafety measures in immunology and molecular biology laboratories	4		4	1, 2, 3

Course coordinator: Dr. Randa M. Talaat

Head of department council: Prof. Dr. Randa M. Talaat



Department: Molecular Diagnostics and Therapeutics

Course Specifications

10. Course information:							
Course Code:	B7-26	Course Title:	Lymphocytes				
No. units	3	Lec.	3	App.	-	Level	Master
Department	Molecular Diagnostics and Therapeutics						

2- Course Aims:	1- know the different types of lymphocytes, 2- Lymphocytecount,3-Lymphocytopenia,4-lymphocytosis
3- Intended Learning Outcomes of Course (ILO's)	
a-Knowledge and Understanding:	Express the development of blood cells 2Summarize the different types of lymphocytes 3Describe signs and symptoms of lymphocytopenia 4Divide the different types of lymphocytes and diseases
b- Intellectual skills:	1Analyze the types of lymphocytes 2Plan how to make a lymphocytic count 3 Compare lymphocytopenia and lymphocytosis 4 Interpret the development of blood cells
c- Professional Skills:	1Apply the different types of T-cells and B-cells 2 Measure the lymphocytic count 3 Form how to deal with lymphocyte and disease 4Adjust the diagnostic pathways of lymphocytopenia,and lymphocytosis
d- General and Transferable Skills	1 work in team 2 Use internet 3 Communicate with others 4 Show administrative skills



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4-Contents:

Week No.	Topic
1	Types of lymphocytes.Function of T-cells in immune reaction
2	Role of B-cells and NK cells in immune mechanism
3	Link between lymphocyte and disease
4	Development of blood cells
5	Lymphocytopenia,signs and symptoms
6	Lymphocytosis,signs and symptoms
7	Discussion and poster presentation

5-Teaching and Learning Methods

- 1-Lectures
- 2-Power point presentations
- 3-Internet search and assignments
- 4-Paper presentation
- 5-Group discussion

6-Teaching and Learning Methods (for students with special needs)

NA



7- Student Assessment:

a. Assessment Methods:	* Semester works, * Midterm exam, * Oral Exam, * Written (final) exam.		
b. Assessment Schedule	* (5 th &10 th weeks), * (6 th week), * (14 th week), * (15 th week).		
c. Weighting of Assessment	10 degrees	ratios	10%,
	10 degrees	ratios	10%,
	20 degrees	ratios	20%,
	60 degrees	ratios	60%
	Total 100 degrees	ratios	100%

List of References:

a-Notes	Basic immunology Third edition Abul K.Abbas
b-Essential Books (Text Books)	Basic and clinical immunology Daniel P Stites, sixth edition
c- Suggested Books	Basic immunology, third edition .Abul K.Abbas
d Periodicals, Web Sites, ... etc ...	http://www.new-science-press.com/browse/cellcycle/resources http://www.sinauer.com

Course coordinator: Dr. Randa M. Talaat
Head of department council: Prof. Dr. Randa M. Talaat



Course Matrix

Week No.	Topic	Knowledge and Understanding a	Intellectual skills b	Professional Skills c	General and Transferable Skills d
1,2	Types of lymphocytes. Function of T-cells in immune reaction	2	1	1	1
3,4	Role of T-cells and B-cells in immune mechanism	2	1	1	2
5,6	Link between lymphocyte and disease	4	-	3	3
7,8	Development of blood cells	1	4	2	4
9,10	Lymphocytopenia ,signs and symptoms	3	3	4	2
11,12	Lymphocytosis,signs and symptoms	4	3	4	2
13,14	Revision.Exam	-	-	-	3, 4

Course coordinator: Dr. Randa M. Talaat

Head of department council: Prof. Dr. Randa M. Talaat



Department: Molecular Diagnostics and Therapeutics

Course Specifications

11. Course information:							
Course Code:	B7-28	Course Title:	Medical virology				
No. units	3	Lec.	3	App.	-	Level	Master
Department	Molecular Diagnostics and Therapeutics						

12. Course Aims	
	<ol style="list-style-type: none"> 1- Enable student to understand the essential basics of viruses of medical importance (general characteristics, classification). 2- Enable student to understand mechanisms and pathogenesis of medical viral infections. 3- Enable student to understand the basic concepts of genetics and immunity of medical viruses. 4- Familiarize students with various methods used for diagnosis of medical viruses. 5- Help students to know different approaches of using antiviral therapy. 6- Make students oriented with etiological causes and epidemiology of some medical viral infections.

13. Intended Learning Outcomes of Course (ILO's)	By the end of course, student should be able to:
gg. Knowledge and Understanding:	<ol style="list-style-type: none"> 1- Classify the properties of medical viruses, interaction with their hosts and human diseases caused by them. 2- Summarize the general characteristics of medical viruses 3- Divide different approaches for classification of medical viruses. 4- Summarize various mechanisms involved in pathogenesis of medical viral infections. 5- Describe life cycle and replication strategies of different groups of medical viruses. 6- Summarize various methods used for diagnosis of medical viruses 7- Divide different approaches of using antiviral therapy. 8- Express clinical conditions, treatment, prevention and



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	control of most important medical viral infections.
hh. Intellectual skills:	1- Compare medical viruses. 2- Derive human diseases outcome due to medical viruses as etiological agents. 3- Analyze the general characteristics of medical viruses. 4- Compare various mechanisms involved in pathogenesis of medical viral infections. 5- Derive the life cycle and replication strategies of different groups of medical viruses. 6- Interpret various methods used for diagnosis of medical viruses 7- Plan for different approaches of antiviral therapy. 8- Analyze clinical conditions, treatment, prevention and control of most important medical viral infections.
ii. Professional Skills of course:	1- Diagnose clinical features of some medical viral infections. 2- Execute laboratory procedures for detection of infection with medical viruses. 3- Apply molecular diagnostic techniques for medical viruses.
jj. General and Transferable Skills	1- Use different scientific data resources (text books, journals, periodicals and internet web sites) to gain scientific knowledge and data. 2- Practice independent learning and seek continuous learning.

14. Course Contents:	
No.	Topic
1	Medical viruses: introduction, biological characteristics and classification
2	Mechanisms and pathogenesis of medical viral infection
3	Medical viruses: genetics, immune response and antiviral therapy
4	Medical viral diagnostics
5	Herpes viruses (CMV, IBV), human papilloma viruses and hepatitis B viruses
6	Hepatitis viruses (A, C), orthomyxoviruses (influenza viruses), paramyxoviruses (measles, mumps)
7	Poliomyelitis, Coxsackievirus, Echovirus and rhinovirus



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15. Teaching and Learning Methods	
	<ul style="list-style-type: none"> - Lectures. - Power point presentations. - Internet search and assignments. - Paper presentations and group discussions.

16. Teaching and Learning Methods (for students with special needs)	Not applied
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17. Student Assessment:			
y. Assessment Methods:	* Semester Works * Midterm Exam * Oral Exam * Written (Final) Exam		
z. Assessment Schedule	* (5 th &10 th weeks), * (6 th) Week, * (14 th) Week, * (15 th) Week.		
aa. Weighting of Assessments	10 degrees	ratios	10 %
	10 degrees	ratios	10 %
	20 degrees	ratios	20 %
	60 degrees	ratios	60 %
	Total 100 degrees	ratios	100%

18. List of References:	
ii. Notes	- Shaalan's text book of pediatrics
jj. Essential Books (Text Books)	<ul style="list-style-type: none"> - Morag C. Timbury. Notes on Medical Virology, 11th edition virology. Churchill Livingstone. - Nelson Text book of pediatrics 17th edition
kk. Suggested Books	- Renato Dulbecco and Harold S. Ginsberg. Virology, 2 nd edition. J.B. Lippincott Company.
ll. Periodicals, Web Sites, ... etc ...	<ul style="list-style-type: none"> - Pediatrics clinic of North America - www.uct.ac.za.

Course coordinator: Prof. Dr. Randa M Talaat



Head of the department council: Prof. Dr. Randa M Talaat

Course Matrix

Week No.	Topic	Knowledge and Understanding a	Intellectual skills b	Professional Skills c	General and Transferable Skills d
1,2	Medical viruses: introduction, biological characteristics and classification	1, 2, 3	1, 3		1, 2
3, 4	Mechanisms and pathogenesis of medical viral infection	4	2		1, 2
5, 6	Medical viruses: genetics, immune response and antiviral therapy	4, 5, 7	2, 5, 7		1, 2
7, 8	Medical viral diagnostics	6	6	2, 3	1, 2
9, 10	Herpes viruses (CMV, IBV), human papilloma viruses and hepatitis B viruses	4, 5, 7, 8	2, 6, 7, 8	1, 2, 3	1, 2
11, 12	Hepatitis viruses (A, C), orthomyxoviruses (influenza viruses), paramyxoviruses (measles, mumps)	4, 5, 7, 8	2, 6, 7, 8	1, 2, 3	1, 2
13, 14	Poliomyelitis, Coxsackievirus, Echovirus and rhinovirus	4, 5, 7, 8	2, 6, 7, 8	1, 2, 3	1, 2

Course coordinator: Prof. Dr. Randa M Talaat

Head of the department council: Prof. Dr. Randa M Talaat



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Department: Molecular Diagnostics and Therapeutics

Course Specifications

19. Course information:							
Course Code:	B7-31	Course Title:	Molecular diagnosis of animal diseases				
No. units	3	Lec.	3	App.	-	Level	Master
Department	Molecular Diagnostics and Therapeutics						

20. Course Aims	
	<ol style="list-style-type: none">1- Enable student to understand the different approaches adopted for molecular diagnosis of animal diseases.2- Help students to know the basic principles of molecular techniques used for detection and diagnosis of animal diseases.3- Familiarize students with various laboratory molecular methods used for diagnosis of animal diseases.4- Enable students to be oriented with different applications of molecular diagnostic assays used for animal diseases.

21. Intended Learning Outcomes of Course (ILO's)	
kk. Knowledge and Understanding:	<ol style="list-style-type: none">1- Summarize the advantage of using molecular techniques for diagnosis of animal infectious diseases.2- Classify testing procedures that are used for molecular diagnosis of animal diseases.3- Describe methods of plasmid profiling of some animal disease-causing bacterial species4- Express the principles of DNA fingerprinting of some animal infectious agents.5- Describe the RNA electropherotyping assays of some animal viruses.6- Summarize fundamentals and steps of nucleic acid hybridization assays.7- Classify different diagnostic applications of nucleic



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	<p>acid hybridization assays for animal diseases.</p> <p>8- Describe the principles of PCR as diagnostic test for animal infectious diseases.</p> <p>9- Express various applications of PCR assays for detection of animal infectious agents.</p> <p>10- Divide methods of nucleic acid sequencing.</p> <p>11- Classify the diagnostic applications of nucleic acid sequence analysis in veterinary infectious diseases.</p> <p>12- Summarize various protein-based diagnostic techniques and their applications for animal infectious diseases.</p>
II. Intellectual skills:	<p>1- Analyze testing procedures used for molecular diagnosis of animal diseases.</p> <p>2- Compare veterinary pathogenic bacteria according their plasmid profiles.</p> <p>3- Analyze molecular laboratory findings of animal disease condition.</p> <p>4- Derive appropriate assays for fingerprinting of nucleic acids.</p> <p>5- Plan for various different formats of nucleic acid probes.</p> <p>6- Interpret the practical diagnostic value of using PCR assay for animal infectious diseases.</p> <p>7- Interpret nucleic acid sequence data for diagnostic purposes.</p> <p>8- Compare different applications of recombinant diagnostic antigens for animal diseases.</p>
mm. Professional Skills of course:	<p>1- Diagnose animal infectious diseases using molecular assays.</p> <p>2- Prepare tests for molecular diagnosis of animal diseases.</p> <p>3- Apply advanced techniques and methods relevant to the molecular diagnosis of animal diseases in a safe, logistical and ethical manner.</p> <p>4- Use appropriate laboratory procedures for detection of animal diseases caused by infectious agents.</p>
nn. General and Transferable Skills	<p>1- Use computers, internet and IT efficiently for professional development</p> <p>2- Collect of knowledge from scientific data sources including text books, journals, periodicals and internet web sites.</p>



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3- Practice self- and continuous learning.

22. Course Contents:	
No.	Topic
1	Molecular diagnosis of animal diseases: introduction and overview
2	Nucleic acid fingerprinting techniques
3	DNA hybridization-based diagnosis of animal diseases
4	PCR as a diagnostic assay for animal diseases
5	Sequence analysis as a diagnostic tool for animal diseases
6	Protein diagnostic techniques for animal diseases
7	Paper Presentations and Group Discussions

23. Teaching and Learning Methods	
	<ul style="list-style-type: none"> - Lectures. - Power point presentations. - Internet search and assignments. - Paper presentations and group discussions.

24. Teaching and Learning Methods (for students with special needs)	Not applied
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25. Student Assessment:	
bb. Assessment Methods:	<ul style="list-style-type: none"> * Semester Works * Midterm Exam * Oral Exam * Written (Final) Exam
cc. Assessment Schedule	<ul style="list-style-type: none"> * (5th & 10th weeks), * (6th) Week, * (14th) Week, * (15th) Week.



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dd. Weighting of Assessments	10 degrees	ratios	10 %
	10 degrees	ratios	10 %
	20 degrees	ratios	20 %
	60 degrees	ratios	60 %
	Total 100 degrees	ratios	100%

26. List of References:	
mm. Notes	- Lecture Notes
nn. Essential Books (Text Books)	-Molecular diagnostics. G.P. Patrinos and W. Ansorge. 2005. Elsevier Academic Press. - Introduction to Biotechnology. 1st Edition. K.S. Bilgrant and A.K. Pandey. 1998. CBS Pulisher & Distributors. Delhi.
oo. Suggested Books	- Veterinary Virology. 3rd Edition. F.A. Murphy, E.P.Gibbs, M.C.Horzinek and M.J.Studdert.1999. Academic Press. San Diego London Boston New York Sydney Tokyo Toronto.
pp. Periodicals, Web Sites, ... etc ...	- Veterinary Microbiology - Journal of veterinary diagnostic investigation - www.dnalc.org/dnalc/resources

Course coordinator: Prof.Dr. Gamal Soliman Radwan

Head of the department council: Prof. Dr. Randa M. Talaat



Course Matrix

Week No.	Topic	Knowledge and Understanding a	Intellectual skills b	Professional Skills of course c	General and Transferable Skills d
1, 2	Molecular diagnosis of animal diseases: introduction and overview	1	1		2,3
3, 4	Nucleic acid fingerprinting techniques	2,3, 4, 5	2,3, 4	1,2,3,4	2,3
5, 6	DNA hybridization–based diagnosis of animal diseases	2,6,7	3, 4, 5	1,2, 3,4	1,2,3
7,8	PCR as a diagnostic assay for animal diseases	2,8,9	3,4,6	1,2, 3,4	1, 2,3
9, 10	Sequence analysis as a diagnostic tool for animal diseases	2,10,11	3,4,7	1,2, 3,4	1,2,3
11, 12	Protein diagnostic techniques for animal diseases	2,12	3, 8	1,2, 3,4	1,2,3
13, 14	Paper Presentations and Group Discussions				2,3

Course coordinator: Prof.Dr. Gamal Soliman Radwan

Head of the department council: Prof. Dr. Randa M. Talaat



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University of Sadat City

Department: Molecular Diagnostics and Therapeutics

Course Specifications

27. Course information:							
Course Code:	B7-32	Course Title:	Molecular diagnosis of plant pathology				
No. units	3	Lec.	3	App.	-	Level	Master
Department	Molecular Diagnostics and Therapeutics						

28. Course Aims	
	<ol style="list-style-type: none">1- Enable student to understand the different approaches adopted for molecular diagnosis of plant diseases.2- Help students to know the basic principles of molecular techniques used for detection and diagnosis of plant diseases.3- Familiarize students with various laboratory molecular methods used for diagnosis of plant diseases.4- Enable students to be oriented with different applications of molecular diagnostic assays used for plant diseases.

29. Intended Learning Outcomes of Course (ILO's)	
oo. Knowledge and Understanding:	<ol style="list-style-type: none">1- Summarize the advantage of using molecular techniques for diagnosis of plant diseases.2- Classify testing procedures that are used for molecular diagnosis of plant diseases.3- Describe methods of plasmid profiling of some plant disease-causing bacterial species4- Express the principles of DNA fingerprinting of some plant microbial agents.5- Describe the RNA fingerprinting assays of some plant viruses.6- Summarize fundamentals and steps of nucleic acid hybridization assays.7- Classify different diagnostic applications of nucleic acid



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	<p>hybridization assays for plant diseases.</p> <p>8- Describe the principles of PCR as diagnostic test for plant microbial diseases.</p> <p>9- Express various applications of PCR assays for detection of plant microbial diseases agents.</p> <p>10- Divide methods of nucleic acid sequencing.</p> <p>11- Classify the diagnostic applications of nucleic acid sequence analysis in plant diseases.</p> <p>12- Summarize various protein-based diagnostic techniques and their applications for plant microbial diseases.</p>
pp. Intellectual skills:	<p>1- Analyze testing procedures used for molecular diagnosis of plant diseases.</p> <p>2- Compare plant pathogenic bacteria according their plasmid profiles.</p> <p>3- Analyze molecular laboratory findings of plant disease condition.</p> <p>4- Derive appropriate assays for fingerprinting of nucleic acids.</p> <p>5- Plan for various different formats of nucleic acid probes.</p> <p>6- Interpret the practical diagnostic value of using PCR assay for plant microbial diseases.</p> <p>7- Interpret nucleic acid sequence data for diagnostic purposes.</p> <p>8- Compare different applications of recombinant diagnostic antigens for plant diseases.</p>
qq. Professional Skills of course:	<p>1- Diagnose plant microbial diseases using molecular assays.</p> <p>2- Prepare tests for molecular diagnosis of plant diseases.</p> <p>3- Apply advanced techniques and methods relevant to the molecular diagnosis of plant diseases in a safe, logistical and ethical manner.</p> <p>4- Use appropriate laboratory procedures for detection of plant diseases caused by microbial agents.</p>
rr. General and Transferable Skills	<p>1- Use computers, internet and IT efficiently for professional development</p> <p>2- Collect of knowledge from scientific data sources including text books, journals, periodicals and internet web sites.</p> <p>3- Practice self- and continuous learning.</p>

	30. Course Contents:
No.	Topic
1	Molecular diagnosis of plant diseases: introduction and overview



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2	Nucleic acid fingerprinting techniques
3	DNA hybridization–based diagnosis of plant diseases
4	PCR as a diagnostic assay for plant diseases
5	Sequence analysis as a diagnostic tool for plant diseases
6	Protein diagnostic techniques for plant diseases
7	Paper Presentations and Group Discussions

31. Teaching and Learning Methods	
	<ul style="list-style-type: none"> - Lectures. - Power point presentations. - Internet search and assignments. - Paper presentations and group discussions.

32. Teaching and Learning Methods (for students with special needs)	Not applied
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33. Student Assessment:			
ee. Assessment Methods:	* Semester Works * Midterm Exam * Oral Exam * Written (Final) Exam		
ff. Assessment Schedule	* (5 th &10 th weeks), * (6 th) Week, * (14 th) Week, * (15 th) Week.		
gg. Weighting of Assessments	10 degrees	ratios	10 %
	10 degrees	ratios	10 %
	20 degrees	ratios	20 %
	60 degrees	ratios	60 %
	Total 100 degrees	ratios	100%

34. List of References:	
qq. Notes	- Lecture Notes
rr. Essential Books (Text Books)	-



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ss. Suggested Books	-
tt. Periodicals, Web Sites, ... etc ...	-

Course coordinator:

Head of the department council: Prof. Dr. Randa M. Talaat

Course Matrix

Week No.	Topic	Knowledge and Understanding a	Intellectual skills b	Professional Skills of course c	General and Transferable Skills d
1, 2	Molecular diagnosis of plant diseases: introduction and overview	1	1		2,3
3, 4	Nucleic acid fingerprinting techniques	2,3, 4, 5	2,3, 4	1,2,3,4	2,3
5, 6	DNA hybridization-based diagnosis of plant diseases	2,6,7	3, 4, 5	1,2, 3,4	1,2,3
7,8	PCR as a diagnostic assay for plant diseases	2,8,9	3,4,6	1,2, 3,4	1, 2,3
9, 10	Sequence analysis as a diagnostic tool for plant diseases	2,10,11	3,4,7	1,2, 3,4	1,2,3
11, 12	Protein diagnostic techniques for plant diseases	2,12	3, 8	1,2, 3,4	1,2,3
13, 14	Paper Presentations and Group Discussions				2,3

Course coordinator:

Head of department council: Prof. Dr. Randa M. Talaat



Department: Molecular Diagnostics and Therapeutics

Course Specifications

35. Course information:							
Course Code:	B7-33	Course Title:	Molecular forensic medicine				
No. units	3	Lec.	3	App.	-	Level	Master
Department	Molecular Diagnostics and Therapeutics						

36. Course Aims	
	1- Enable student to know more about the molecular forensics 2- Help student to understand the application of molecular forensics in the modern life debate

37. Intended Learning Outcomes of Course (ILO's)	By the end of course, student should be able to:
ss. Knowledge and Understanding:	1-Know Current and Future Trends in Forensic Molecular Biology 2- Express Basic Tools and Techniques in Molecular Biology 3- Summarize Automated DNA Extraction Techniques for Forensic Analysis 4- Describe Real-Time Quantitative PCR in Forensic Science 5- Describe minisatellite and microsatellite DNA typing analysis 6- Describe application of SNPs in forensic casework 7- Divide laboratory information systems for forensic analysis of DNA based evidence 8- Classify statistical presentation of forensic data 9- Describe List of Protein Profiling for Forensic and Biometric Applications
tt. Intellectual skills:	1- Analyze Information of comprehensive overview of modern forensic molecular technologies 2- Plan the growing debate on the application of national DNA databases. 3- Interpret Information the initial phases of investigation to the conclusion of cases involving molecular forensic analysis



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	<p>4- Derive Link Between in DNA-profiling/ancient DNA analysis who are also competent in the forensic analytical techniques relevant to drug and toxin detection and quantification in fluids, tissues and contaminated products</p> <p>5- Derive Evidences about Forensic science is interested in detecting a crime, handle evidences and identify the perpetrator.</p> <p>6- Compare Information of Modern molecular techniques allow detailed analysis of the genetic code of organisms and sequence polymorphisms allow differentiate closely related individuals.</p>
uu. Professional skills of the course:	<p>1- Apply Restriction Fragment Length Polymorphism (RFLP)</p> <p>2- Execute PCR Polymerase chain reaction Analysis</p> <p>3- Measure of STR Short tandem repeat Analysis</p> <p>4- Form of Mitochondrial DNA Analysis</p>
vv. General and Transferable Skills:	<p>1- Work in team</p> <p>2- Appear management skills</p> <p>3- Treat by Efficiency with Computer</p> <p>4- Use Internet</p> <p>5- Communicate with others</p> <p>6- Appear self-learning abilities</p> <p>7- Use Application of Computer in the Field of Interest</p> <p>8- Show Administration Skills</p> <p>9- Use Audio & Video Means for Displaying Information</p>

38. Course Contents:	
No.	Topic
1	Trends In Forensic Molecular Biology
2	Basic Tools and Techniques in Molecular Biology
3	Automated DNA Extraction Techniques for Forensic Analysis
4	Real Time Quantitative PCR in Forensic Science
5	Minisatellite and Microsatellite DNA Typing Analysis
6	Application of SNPs in Forensic Casework
7	The X Chromosome in the Forensic Science: Past, Present and Future

39. Teaching and Learning Methods	
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	<ul style="list-style-type: none"> - Lectures. - Power point presentations. - Internet search and assignments. - Paper presentations and group discussions.
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40. Teaching and Learning Methods (for students with special needs)	Not applied
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41. Student Assessment:			
hh. Assessment Methods:	* Semester Works * Midterm Exam * Oral Exam * Written (Final) Exam		
ii. Assessment Schedule	* (5 th &10 th weeks), * (6 th) Week, * (14 th) Week, * (15 th) Week.		
jj. Weighting of Assessments	10 degrees	ratios	10 %
	10 degrees	ratios	10 %
	20 degrees	ratios	20 %
	60 degrees	ratios	60 %
	Total 100 degrees	ratios	100%

42. List of References:	
uu. Notes	-Course notes shaalan's text book of pediatrics (For Free) Obtained copy from the institute library
vv. Essential Books (Text Books)	-Nelson Text book of pediatrics
ww.Suggested Books	-For far text book of pediatrics
xx. Periodicals, Web Sites, ... etc ...	-Pediatrics clinic of North America

Course coordinator: Dr Usama Fouad Shaalan

Head of the department council: Prof. Dr. Randa M. Talaat



Course Matrix

Week No.	Topic	Knowledge and Understanding a	Intellectual skills b	Professional Skills c	General and Transferable Skills d
1,2	Trends In Forensic Molecular Biology	1	1	1	1
3, 4	Basic Tools and Techniques in Molecular Biology	2	2	2	2
5, 6	Automated DNA Extraction Techniques for Forensic Analysis	3	3	3	3
7, 8	Real Time Quantitative PCR in Forensic Science	4	4	4	4
9, 10	Minisatellite and Microsatellite DNA Typing Analysis	5	5	-	5
11, 12	Application of SNPs in Forensic Casework	6	6	-	6
13, 14	The X Chromosome in the Forensic Science: Past, Present and Future	7	7	-	7

Course coordinator: Dr. Usama Fouad Shaalan

Head of the department council: Prof. Dr. Randa M. Talaat



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University of Sadat City

Department: Molecular Diagnostics and Therapeutics

Course Specifications

1. Course information:							
Course Code:	B7-36	Course Title:	Monoclonal antibody				
No. units	3	Lec.	3	App.	-	Level	Master
Department	Molecular Diagnostics and Therapeutics						

2- Course Aims:	The aim of the course is to know and express what is meant by monoclonal antibody, and 2-to interpret the mean of affinity maturation, and to3- gather information for how is formed monoclonal antibody, and its application
3- Intended Learning Outcomes of Course (ILO's) By the end of this course ,student should be able to	
a-Knowledge and Understanding:	<ol style="list-style-type: none"> 1. Summarize the usages of monoclonal antibodies in cancer therapy 2. Describe what we mean by affinity maturation 3. Classify and summarize the advantages of stem cell therapy 4. Express what is meant by monoclonal antibody
b- Intellectual skills:	<ol style="list-style-type: none"> 1. Interpret evidences about what we mean by monoclonal antibody 2. Analyze advantages of stem cell therapy 3. Compare between the differences in usages of monoclonal antibodies and stem cell in cancer therapy 4. Interpret how are monoclonal antibodies formed ,and different usages of molecular techniques



c- Professional skills of course	<ol style="list-style-type: none"> 1. Adjust how monoclonal antibodies are produced 2. Apply the use of anti-CD3 in monoclonal antibody 3. Measure the usages of monoclonal antibodies 4. Execute the activation of B-lymphocytes ,and usages of different molecular techniques
d- General and Transferable Skills	<ol style="list-style-type: none"> 1. Work in team 2. Use internet 3. Communicate with others 4. Show administrative skills
4-Contents:	
Week No.	Topic
1,2	The role of immune system, and know what is meant by myeloma cells
3,4	list of function of monoclonal antibodies
5,6	The link between stem cell therapy and monoclonal therapy in cancer treatment
7,8	Name the role of anti-CD3 in monoclonal antibody
9,10	What is meant by immunosuppressive therapy
11,12	How to practice molecular techniques in brief
13,14	Discussion and poster presentation
5-Teaching and Learning Methods	<ol style="list-style-type: none"> 1-Lectures 2-Power point presentations 3-Internet search and assignments 4-Paper presentation 5-Group discussion



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6-Teaching and Learning Methods (for students with special needs)	NA		
7- Student Assessment:			
	a. Assessment Methods:	* Semester works, * Midterm exam, * Oral Exam, * Written (final) exam	
	b. Assessment Schedule	* (5 th &10 th weeks), 6 th week 14 th week 15 th week	
	c. Weighting of Assessment	10 degrees ratios 10%, 10 degrees ratios 10%, 20 degrees ratios 20%, 60 degrees ratios 60% Total 100 degrees ratios 100%	
List of References:			
a-Notes	-		
b-Essential Books (Text Books)	Basic and clinical immunology Daniel P Stites, sixth edition		
c- Suggested Books	Basic immunology, third edition .Abul K.Abbas		



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d Periodicals, Web Sites, ... etc ...	-
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Course coordinator: Dr. Randa Talaat

Head of the department council: Prof. Dr Randa Mohamed Talaat

Course Matrix

Week No.	Topic	Knowledge and Understanding a	Intellectual skills b	Professional Skills c	General and Transferable Skills d
1,2	The role of immune system and what is meant by myeloma cells	1	3	1	1
3, 4	List of functions of monoclonal antibody	2, 4	1	2	2
5, 6	The link between stem cell therapy and monoclonal therapy in cancer	1	2	1, 3	3
7, 8	Name the role of anti-CD3 in monoclonal antibody	3	4	4	2
9, 10	Immunosuppressive therapy	4	2	1	4
11, 12	How to practice molecular techniques in brief	-	3	2, 3	3



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13, 14	Discussion and poster presentation	-	-	-	-
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Course coordinator: Dr. Randa Mohamed Talaat

Head of department council: Prof. Dr. Randa Mohamed Talaat



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University of Sadat City

Department: Molecular Diagnostics and Therapeutics

Course Specifications

1. Course information:							
Course Code:	B7- 39	Course Title:	Pharmaceutical Biotechnology				
No. units	3	Lect.	3	App.	-	Level	Master
Department	Molecular Diagnostics and Therapeutics						

2. Course Aims	
	<ul style="list-style-type: none">■ To develop a broad spectrum of knowledge related to the applications of biotechnology in the production of pharmaceuticals.■ Expressing new biotechnologically derived products and recent strategies used for disease treatment and prevention.■ Knowing different production techniques and points of consideration.

. Intended Learning Outcomes of Course (ILO's)	
c. Knowledge and Understanding	<ul style="list-style-type: none">1- Express an overview on recombinant DNA and recombinant protein technologies.2- Summarize the molecular basis of therapeutics.3- Describe methods of obtaining transgenic animals.4- Summarise strategies in gene therapy, gene silencing, cell therapy and stem cells.
d. Intellectual skills	<ul style="list-style-type: none">3- Analyze research papers in the field of recombinant technology to produce therapeutic products.4- Compare between different technologies in the production of r-DNA, r-proteins and transgenic animal production and stem cell production.
c. Professional Skills	<ul style="list-style-type: none">4- Apply concepts of biotechnology in producing



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	pharmaceutical products. 5- Conduct pilot studies in the field of pharmaceutical biotechnology in the process of preparing for projects. 6- Test for gene polymorphism in early dividing embryos as an early diagnosis.
d. General and Transferable Skills	1- Use information communication technology to improve his/her professional practice in internet based searches. 2- Practice self-appraisal and determines his/her learning needs. 5- Use different sources of information to obtain data in the field of pharmaceutical biotechnology. 4- Use educational technology displaying devices for explain important modern techniques of presentation in. 5- Manage time effectively & work in teams. 6- Show Work effectively in teamwork.

4. Course Contents:	
No.	Topic
1	Introduction to recombinant DNA and recombinant protein technology
2	Recombinant protein production: Methods and points of consideration
3	Transgenic animals and its applications
4	Concepts and strategies in gene therapy
5	Gene Augmentation Therapy
6	Gene expression, Gene silencing technologies applications
7	Cell therapy and stem cells

5. Teaching and Learning Methods	
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	Lectures. Class activities Discussions Presentations Reports
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6. Teaching and Learning Methods (for students with special needs)	Not applicable
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7. Student Assessment:			
a. Assessment Methods:	<ul style="list-style-type: none"> * Semester Works * Midterm Exam * Oral Exam * Written (Final) Exam 		
b. Assessment Schedule	<ul style="list-style-type: none"> * (5th & 10th weeks), * (6th) Week, * (14th) Week, * (15th) Week. 		
c. Weighting of Assessments	10 degrees	ratios	10 %
	10 degrees	ratios	10 %
	20 degrees	ratios	20%
	60 degrees	ratios	60 %
	Total 100 degrees	ratios	100%

8. List of References:	
a. Notes	-----
b. Essential Books (Text Books)	<ul style="list-style-type: none"> • Pharmaceutical Biotechnology
c. Suggested Books	<ul style="list-style-type: none"> • Molecular Therapeutics 21st Century Medicine by Pamela Greenwell and Michelle McCulley.



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d. Periodicals, Web Sites, ... etc.	-----
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Course coordinator:

Dr. Manal Osama El Hamshary

Head of the department council:

Prof. Dr. Randa M. Talaat



Course Matrix

No.	Course topic	Knowledge and understanding a	Intellectual abilities b	Professional skills c	General and transferable skills d
1	Introduction to recombinant DNA and recombinant protein technology	1,2	1	-	-
2	Recombinant protein production: Methods and points of consideration	1,2	1,2	1,2	1,2,3,4,5
3	Transgenic animals and its applications	3	1,2	1,2	1,2,3,4,5
4	Concepts and strategies in gene therapy	4	1,2	1,2	1,2,3,4,5
5	Gene Augmentation Therapy	4	1,2	1,2	1,2,3,4,5
6	Gene expression, Gene silencing technologies applications	4	1,2	1,2	1,2,3,4,5
7	Cell therapy and stem cells	4	1,2	1,2	1,2,3,4,5

Course coordinator:

Dr. Manal Osama El- Hamshary

Head of the department council:

Prof. Dr. Randa M. Talaat



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University of Sadat City

Department: Molecular Diagnostics and Therapeutics

Course Specifications

43. Course information:							
Course Code:	B7-40	Course Title:	Physiology and pathology of leucocyte				
No. units	3	Lec.	3	App.	-	Level	Master
Department	Molecular diagnostics and therapeutics						

44. Course Aims	
	<p>The aim of the course is to know</p> <ol style="list-style-type: none"> 1-Evolution of immune system 2-Mechanism of immune system 3-Diversity of lymphocytes

45.Intended Learning Outcomes of Course (ILO's)	
ww. Knowledge and Understanding:	<ol style="list-style-type: none"> 1. Express how to understand the evolution of immune system 2. Summarize the mechanism of immune system 3. Classify the diversity of lymphocytes 4. Describe what is meant by pathology of leucocyte
xx.Intellectual skills:	<ol style="list-style-type: none"> 1. Analyze the role of T and B cell lymphocytes 2. Plan the diversity of lymphocytes 3. Compare leucocytosis and leucocytopenia 4. Interpret the evolution of immune system
yy.Professional Skills of course:	<ol style="list-style-type: none"> 1. Apply the mechanism of the immune system 2. Measure the diversity of lymphocytes 3. Form an estimate plan to deal with a case of leucocytosis 4. Adjust the role of immune system in leucocytopenia
zz.General and Transferable Skills	<ol style="list-style-type: none"> 1. Work in team 2. Use internet 3. Communicate with others 4. Show administration skills



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46. Course Contents:	
Week No.	Topic
1	Definition and description of leucocytosis and leucopenia
2	Description of granulocytosis and agranulocytosis
3	Comparison between neutrophilia and neutropenia
4	Comparison between lymphocytosis and lymphopenia
5	What is meant by basophilia, eosinophilia and monocytosis
6	Physiological and pathological condition of granulocytes
7	Physiological and pathological condition of monocytes and lymphocytes

47. Teaching and Learning Methods	
	1-Lectures 2-Power point presentations 3-Internet search and assignments 4-Paper presentation 5-Group discussion

48. Teaching and Learning Methods (for students with special needs)	Not applicable
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49. Student Assessment:			
kk. Assessment Methods:	*Semester works, *Midterm exam, *Oral exam, *Written (Final) exam.		
ll. Assessment Schedule	* (5 th &10 th weeks), * (6 th) Week, * (14 th) Week, * (15 th) Week.		
mm. Weighting of Assessments	10 degrees	ratios	10%,
	10 degrees	ratios	10%,
	20 degrees	ratios	20 %,
	60 degrees	ratios	60%
	Total 100 degrees	ratios	100%



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50. List of References:	
yy. Notes	Basic immunology Third edition Abul K.Abbas
zz. Essential Books (Text Books)	Basic and clinical immunology Daniel P Stites,sixth edition
aaa. Suggested books	Basic immunology,third edition .Abul K.Abbas
bbb. Periodicals, Web Sites, ... etc ...	

Course coordinator:

Dr. Randa Mohamed Talaat

Head of the department council:

Prof. Dr. Randa Mohamed Talaat



Course Matrix

Week No.	Topic	Knowledge and Understanding a	Intellectual skills b	Professional Skills c	General and Transferable Skills d
1,2	Definition and description of leucocytosis and leucopenia	3, 4	3	3, 4	1
3, 4	Description of granulocytosis and agranulocytosis	-	2	-	1
5, 6	Comparison between neutrophilia and neutropenia	2	4	-	2
7, 8	Comparison between lymphocytosis and lymphopenia	1	4	-	2
9, 10	What is meant by basophilia, eosinophilia and monocytosis	2	-	-	3
11, 12	Physiological and pathological condition of granulocytes	1, 2	1	4	1
13, 14	Physiological and pathological condition of monocytes and lymphocytes	1, 2	1	4	1

Course coordinator: Dr. Randa Mohamed Talaat

Head of department council: Prof. Dr. Randa Mohamed Talaat