



COURSE SPECIFICATION

(Tumor biology, Radiobiology & Radiation protection)

Faculty of Medicine- Mansoura University

(A) Administrative information

(1) Programme offering the course.	Postgraduate Master degree of Clinical Oncology and Nuclear Medicine/ CONM517
(2) Department offering the programme.	Clinical oncology and nuclear medicine department
(3) Department responsible for teaching the course.	Clinical oncology and nuclear medicine department
(4) Part of the programme.	First part
(5) Date of approval by the Department's council	7/6/2016
(6) Date of last approval of programme specification by Faculty council	9/8/2016
(7) Course title.	Radiobiology & Radiation protection
(8) Course code.	CONM517RBP
(9) Credit hours	1 hour lecture 1 hour clinical
(10) Total teaching hours.	16 hours lectures 30 hours clinical

(B) Professional information

(1) Course Aims:

The broad aims of the course are as follows: (either to be written in items or as a

Each trainee in Clinical Oncology & Nuclear Medicine who

complete this course should be able to:

- 1- Educate the molecular basis of cancer cells.**
- 2- Provide opportunities to gain knowledge, practice and studying of radiation and chemotherapy effect .**
- 2- teach the candidates different schedules of radiation and their modifiers.**
- 3- Prepare them to be capable of using radioprotectors and radiosensitizers including chemotherapy.**
- 4-educate them chemotherapeutic groups.**
- 5- prvide the opportunity to recognize molecular basis, effect , resistance and toxicity of chemotherapy.**

(2) Intended Learning Outcomes (ILOs):

Intended learning outcomes (ILOs); Are four main categories: knowledge & understanding to be gained, intellectual qualities, professional/practical and transferable skills.

On successful completion of the course, the candidate will be able to:

A- Knowledge and Understanding

A1: describe molecular cell biology of tumor, cell cycle, cell survival curve.

A2: Describe Principles of radiation protection, to be capable of safe radiotherapy practice.

A3: Recognize radiation interaction with matter, and its effect on different body organs repair of cell damage after radiation.

A4:Classify chemotherapeutic drugs and groups.

A5:Identify molecular basis of sensitivity and resistance to radiation and chemotherapy.

A6:express growth factors receptors and target therapy

A7:explain oxygen effect and different fractionation shedules.

2- Intellectual activities (I)

The Postgraduate Degree provides opportunities for candidates to achieve and demonstrate the following intellectual qualities:

B- Intellectual skills

B1: Distinguish different factors affecting radiation.

B2: Interpret radiation and chemotherapy effect and interaction with different body organs.

B3:Apply different radiation shedules.

B4: recognize growth factors receptors, and target therapy.

B5:distinguish chemical modifiers, sensitivity and resistance to treatment.

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C- Professional/practical skills

C1: Evaluate acute and late effect of radiation on different tissues and body organs.

C2: Examine response to chemotherapy during radiation.

C3:Deal with chemotherapy and radiation toxicity.

C4:be able to recognize chemical modifiers, radiosensitizer and radioprotectors

C5:apply different fractionation

(3) Course content: 15 hours lectures

Subjects	Lectures
* Principles of molecular cell Biology of cancer: DNA Structure, gene expression, human genome, identification of oncogenes and tumor suppressor genes and implication for oncology	0.5
* Cell cycle, tumor growth and molecular biology of the cell cycle.	0.5
* Cell survival curves	0.5
* Chromosome abnormalities in human cancers and leukemia.	0.5
*Growth factors and Growth factor receptors and relation to malignancy and targeted therapy	0.5
* Radiobiology : radiation interaction with biological material, repair of radiation damage, relative biologic effectiveness.	0.5
*Linear energy transfer (LET). *High LET.	0.5
* Oxygen effect and reoxygenation	0.5
*Radiation dose and fractionation	0.5
* Tumor radiobiology , radiosensitivity, adverse effects of radiation.	0.5
*Radiosensitizers and radioprotectors.	0.5
*Effect of radiation on different tissues and organs.	
-Skin	0.5
-liver	0.5
-Lung	0.5
-Digestive system	0.5
-Testis and ovaries	0.5
-Central nervous system	0.5
-Cardiac system	0.5
-Hemopoietic and lymphoid	0.5
-Kidneys	0.5
-Skeletal system	0.5
*Acute and late effects of whole body irradiation	0.5

*Chemical modifiers of radiation.	0.5
*Chemotherapy and irradiation.	0.5
* Biology of cancer chemotherapy,	0.5
*Biochemical resistance to chemotherapy.	0.5
*Molecular basis of chemosensitivity & chemoresistance.	0.5
*Chemotherapeutic drugs and groups.	0.5
*Chemotherapy toxicity.	0.5
* Response to chemotherapy and biology of tumor growth	0.5

(4) Course contents . clinical training (30 Hours)

Clinical skill	Teaching hours
*Effect of radiation on different tissues and organs.	
-Skin	2
-liver	1
-Lung	2
-Digestive system	2
-Testis and ovaries	1
-Central nervous system	2
-Cardiac system	1
-Hemopoietic and lymphoid	2
-Kidneys	1
-Skeletal system	2
*Radiation dose and fractionation	2
*Radiosensitizers and radioprotectors	2
*Acute and late effects of whole body irradiation	2
*Chemical modifiers of radiation.	2
*Chemotherapy and irradiation.	2
*Chemotherapy toxicity.	2

* Response to chemotherapy and biology of tumor growth	2

(5) Teaching methods:

4.1. lectures.

4.2. scientific meetings

(6) Assessment methods:

5.1. written exam for assessment of Knowledge and understanding.

5.2. oral exam for assessment of Knowledge and understanding and intellectual skills.

5.3 MCQ assessment for assessment of Knowledge and understanding.

Assessment schedule.

Assessment 1: written exam held after 6 months of registration.

Assessment 2: oral exam held after 6 months of registration and structured oral

Assessment 3: MCQ exam held at the end of first semester (15th week).

Assessment 4: clinical exam held after 6 months of registration and OSCE stations

Percentage of each Assessment to the total mark.

Written exam: 144 marks,

MCQ (as a continuous assessment). 36 marks

Structured Oral exam: 60 marks,

OSCE Clinical exam: 60 marks

(7) References of the course.

6.2: Text books:

- **Perez CA, Brady LW, Halperin EC, et al., editors.** *Principles and Practice of Radiation Oncology*. 5th ed. Philadelphia: Lippincott Williams & Wilkins; 2008.
- **Hansen EK and Roach M.:** *Handbook of Evidence-based Radiation Oncology*. 1st edition. New York: Springer Science+ Business Media, LLC; 2007.
- **Casciato DA,** editor. *Manual of clinical oncology*. 6th edition. Philadelphia: Lippincott Williams & Wilkins; 2009.
- **DeVita VT, Hellman S, Rosenberg SA,** editors. *Principles and Practice of Oncology*. 8th ed. Philadelphia: Lippincott; 2008.

(8) Facilities and resources mandatory for course completion.

Candidates and their learning are supported in a number of ways:

- Candidates logbook
- Programme Specification
- Extensive library and other learning resources
- Computer laboratories with a wide range of software
- Intranet with a wide range of learning support material
- MSc/MD Dissertation Supervisor

Course coordinator:

Prof. d. Soumaya Eiteba

Assistant prof. Rasha Abdel Latif

Head of the department.

Prof.d. Ibrahim Awad

Date:

P.S. This specification must be done for each course.