



BROWARD COMMUNITY COLLEGE COURSE OUTLINE

LAST REVIEW: 2008-2009

(i.e. 2003-2004)

NEXT REVIEW: 2013-2014

(i.e. 2008-2009)

STATUS: A

(A, I, D)

COURSE TITLE: Principles of Radiation Therapy

COMMON COURSE NUMBER: RAT 2022

CREDIT HOURS: 3

CONTACT HOUR BREAKDOWN

(per 16 week term)

CLOCK HOURS:

(Voc. Course ONLY)

Lecture: 48

Lab:

Clinic:

Other:

PREREQUISITE(S): RAT2021,

COREQUISITE(S): RAT2241,

COURSE DESCRIPTION *(750 character smaximum)*: A continuation of the fundamentals of technologic applications in simulation and patient treatment.

General Education Requirements – Associate of Arts Degree (AA), meets Area(s):

Area

General Education Requirements – Associate in Science Degree (AS), meets Area(s):

Area

General Education Requirements – Associate in Applied Science Degree (AAS), meets Area(s):

Area

UNIT TITLES

1. Selection of treatment modalities.
2. Simulation rationale and general procedures.
3. Simulation procedure for brain and head/neck.
4. Simulation procedure for the chest and breast.
5. Simulation procedure for a “mantle field”.
6. Simulation procedure for a Para-aortic and an inverted “Y” field.
7. Simulation of a whole abdomen and pelvis field.
8. Simulation procedure of spine and of extremities.
9. Method of contouring treatment areas.
10. Intracavitary and interstitial radiation safety.

ASSESSMENT:

Please provide a brief description *(250 characters maximum)* that details how students will be assessed on the course outcomes.

Assignments, comprehensive/cumulative unit exams, comprehensive/cumulative final exams



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Common Course Number: RAT 2022

UNITS

Unit 1 Selection of treatment modalities

General Outcome:

- 1.0 The student shall: Discuss the advantage and disadvantage of superficial/orthovoltage treatment.**

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 1.1 Discuss the advantage and disadvantage of superficial/orthovoltage treatment.**
- 1.2 Discuss the advantage and disadvantage of megavoltage photon treatment.**
- 1.3 Discuss the advantage and disadvantage of electron beam treatment.**
- 1.4 Discuss the advantage and disadvantage of photon/electron treatment.**
- 1.5 Discuss the advantage and disadvantage of intracavitary treatment.**
- 1.6 Discuss the advantage and disadvantage of interstitial treatment.**



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UNITS

Unit 2 Simulation rationale and general procedures.

General Outcome:

2.0 The student shall: be able to describe the general principles of stimulation.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 2.1 Discuss the need for simulation.**
- 2.2 Describe a simulator.**
- 2.3 List the quality assurance procedures performed daily on a simulator.**
- 2.4 Discuss the relationship between simulation and dosimetry.**
- 2.5 Discuss the general principles of simulation.**
- 2.6 Explain the relationship between the simulator and the treatment machine.**
- 2.7 List the personnel associated with the simulation procedure.**
- 2.8 List the general equipment necessary for the simulation of a patient.**
- 2.9 Discuss general simulation terminology.**



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UNITS

Unit 3 Simulation procedure for brain and head/neck.

General Outcome:

- 3.0 The student shall: be able to discuss simulation procedure for brain and head/neck.**

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 3.1 Define the clinical setting for brain irradiation and simulation**
- 3.2 Discuss the technique for simulating a whole brain in the lateral position.**
- 3.3 Explain the need for a reduced brain field.**
- 3.4 Define the borders for whole brain simulation**
- 3.5 List the dosimetry information taken at the time of brain simulation.**
- 3.6 Define the clinical settings for head/neck simulation and irradiation.**
- 3.7 Discuss the technique for simulating a head/neck field.**
- 3.8 Explain the technique used when a supra. Port is also used.**
- 3.9 Define the borders for head and neck fields.**
- 3.10 List the dosimetry information taken at the time of head/neck simulation.**



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UNITS

Unit 4 Simulation procedure for chest and breast

General Outcome:

- 4.0 The student shall: be able to discuss the simulation procedure for a chest and also a breast simulation.**

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 4.1 Define the clinical setting for chest simulation and irradiation.**
- 4.2 Discuss the technique for simulating a chest port.**
- 4.3 Explain the need for reduced ports due to cord coordination.**
- 4.4 Define the borders for chest simulation.**
- 4.5 List the dosimetry information taken at the time of chest simulation.**
- 4.6 Define the clinical settings for breast irradiation and simulation.**
- 4.7 Discuss the technique for simulating adjacent breast and supra. ports.**
- 4.8 Discuss the technique for simulating intact breast ports.**
- 4.9 Define the borders of a breast port.**
- 4.10 List the dosimetry information taken at the time of breast simulation.**



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UNITS

Unit 5 Simulation procedure for a mantle field.

General Outcome:

- 5.0 The student shall: be able to discuss the simulation procedure for a Hodgkin's mantle port.**

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 5.1 Define the clinical setting for mantle simulation and irradiation.**
- 5.2 Discuss the technique for simulating a mantle AP and PA ports.**
- 5.3 Define the borders for a mantle port.**
- 5.4 List the dosimetry information taken at the time of simulation.**



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UNITS

Unit 6 Simulation procedure for a para-aortic and inverted “Y” field.

General Outcome:

- 6.0 The student shall: able to discuss the simulation procedure for a para-aortic port and an inverted “Y” port.**

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 6.1 Define the clinical setting for a Para-aortic simulation and irradiation.**
- 6.2 Discuss the technique for simulating a Para-aortic port.**
- 6.3 Define the borders for Para-aortic fields.**
- 6.4 Define the need for a gap for Para-aortic fields.**
- 6.5 List the dosimetry information taken at the time of simulation of this port.**
- 6.6 Define the clinical setting for an inverted “Y” port.**
- 6.7 Define the technique for simulating an inverted “Y” port.**
- 6.8 Define the borders for an inverted “Y” port.**
- 6.9 Discuss the need for a gap for an inverted “Y” port.**
- 6.10 List the dosimetry information taken at the time of simulation of this port.**



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UNITS

Unit 7 Simulation of a whole abdomen and pelvis field.

General Outcome:

- 7.0 The student shall: be able to discuss the simulation procedure for a whole abdomen and pelvis simulation.**

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 7.1 Define the clinical setting for whole abdomen simulation and irradiation.**
- 7.2 Discuss the technique for simulating a whole abdomen port.**
- 7.3 Explain the dose limiting structures within the abdomen.**
- 7.4 Define the borders for whole abdomen simulation;**
- 7.5 List the dosimetry information taken for whole abdomen simulation.**
- 7.6 Define the clinical settings for pelvis simulation and irradiation.**
- 7.7 Discuss the technique for simulating a pelvis field.**
- 7.8 Explain the dose limiting structures within the pelvis.**
- 7.9 Define the borders for pelvis fields.**
- 7.10 Discuss rotational treatment simulation for pelvis boost field.**
- 7.11 List the dosimetry information taken at the time of pelvis simulation.**



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UNITS

Unit 8 Simulation procedure of spine and of the extremities.

General Outcome:

- 8.0 The student shall: be able to discuss the simulation procedure for a spine port and also for port of the extremities.**

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 8.1 Define the clinical setting for a spine simulation and irradiation.**
- 8.2 Discuss the borders for a spine field.**
- 8.3 Define the borders for a spine field.**
- 8.4 List the dosimetry information taken at the time of this simulation.**
- 8.5 Define the clinical setting for an extremity simulation and irradiation.**
- 8.6 Discuss the technique for simulating an extremity port.**
- 8.7 Define the borders for an extremity port.**
- 8.8 List the dosimetry information take at the time of these simulation.**



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UNITS

Unit 9 Method of contouring treatment areas.

General Outcome:

- 9.0 The student shall: be able to explain the methods and purposes of contouring.**

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 9.1 Define the purpose of contouring a patient.**
- 9.2 Construct a contour using solder wire or plaster of Paris.**
- 9.3 Explain the use of C.T. for contouring.**
- 9.4 Compare the difference types of contours.**



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UNITS

Unit 10 Intracavitary and interstitial radiation safety

General Outcome:

10.0 The student shall: be able to discuss the principles of radiation safety for internal radiation therapy.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 10.1 Explain the three principles of radiation safety: time, distance, shielding.**
- 10.2 Define after loading techniques.**
- 10.3 Discuss the nursing care of patients undergoing implants.**
- 10.4 Compare sealed and unsealed source safety.**
- 10.5 Discuss the use of dosimeters for implant patients.**
- 10.6 Compare low dose implants and high dose implants.**