

**2016-2017 Syllabus as of June 28, 2016**

**Physics of Radiation Therapy for Resident Physicians**

**Time of Meeting: Thursdays from 7:00 – 8:00 AM**

**Room: Smilow Conference Room LL 505**

**Textbook: Physics of Radiation Therapy, Faiz M. Khan**

|           |   |         |
|-----------|---|---------|
| 14-Jul-16 | Introduction: Treatment Planning  | Kim     |
| 21-Jul-16 | Atomic and Nuclear Structure: The Atom                                  | Gignac  |
| 28-Jul-16 | Beam Production: Basic Physics of X-Ray Beam Production                 | Gignac  |
| 4-Aug-16  | Beam Production: Generation of Beams                                    | Gignac  |
| 11-Aug-16 | Treatment Machines: Linacs  | Gignac  |
| 18-Aug-16 | Treatment Machines: Linac Collimation Systems and Other Teletherapy     | Gignac  |
| 25-Aug-16 | Radiation Interaction: Interactions of X-and Gamma-rays with Matter     | Carlson |
| 1-Sep-16  | Radiation Interaction: Attenuation of Photon Beams                      | Carlson |
| 8-Sep-16  | Radiation Interaction: Interactions of Particulate Radiation            | Carlson |
| 15-Sep-16 | Beam Quality & Dose: Monoenergetic / Polyenergetic Bremsstrahlung Beams | Kamath  |
| 22-Sep-16 | Beam Quality & Dose: Dose Quantities and Units                          | Kamath  |
| 29-Sep-16 | Radiation Measurement & Calibration: Calculation of Dose                | Tien    |
| 6-Oct-16  | Radiation Measurement & Calibration: Dose Output Calibration            | Tien    |
| 13-Oct-16 | Radiation Measurement & Calibration: Clinical Dosimetry                 | Tien    |
| 20-Oct-16 | Review  | Tien    |
| 27-Oct-16 | Photon EBRT: Dosimetry Concepts (Part I)                                | Lincoln |
| 3-Nov-16  | Photon EBRT: Dosimetry Concepts (Part II)                               | Lincoln |
| 10-Nov-16 | Photon EBRT: System of Dose Calculations                                | Lincoln |
| 17-Nov-16 | Photon EBRT: Computerized Planning                                      | Liu     |
| 24-Nov-16 | Thanksgiving Week   |         |
| 1-Dec-16  | Photon EBRT: Computerized Treatment Planning Strategies                 | Liu     |
| 8-Dec-16  | Photon EBRT: Surface Corrections and Heterogeneity Calculations         | Liu     |
| 15-Dec-16 | Photon EBRT: Adjoining Fields and Special Dosimetry Problems            | Liu     |
| 22-Dec-16 | Christmas Holiday   |         |
| 29-Dec-16 | Electron EBRT: Basic Characteristics                                    | Deng    |
| 5-Jan-17  | Electron EBRT: Treatment Planning                                       | Deng    |
| 12-Jan-17 | EBRT QA: Overview of QA in Radiation Therapy                            | Deng    |
| 19-Jan-17 | EBRT QA: Linac and Imaging QA   | Deng    |
| 26-Jan-17 | EBRT Treatment Setup: Immobilization & Positioning                      | Liu     |
| 2-Feb-17  | 3DCRT: Concepts & Treatment Planning                                    | Chen    |
| 9-Feb-17  | 3DCRT: Plan Evaluation & Comparison                                     | Chen    |
| 16-Feb-17 | IMRT: Concepts & Delivery Systems                                       | Chen    |
| 23-Feb-17 | IMRT: Dose Prescription & Inverse Planning                              | Chen    |
| 2-Mar-17  | IMRT: QA  | Chen    |
| 9-Mar-17  | Special Procedure: Cranial SRS  | Bond    |
| 16-Mar-17 | Special Procedure: SBRT   | Bond    |

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| 23-Mar-17 | Special Procedure: TBI & TSET                                   | Bond    |
| 30-Mar-17 | Brachy: Radioactivity, Decay, Radioactive Sources & Calibration | Bond    |
| 6-Apr-17  | Brachy: Calculations of Dose Distributions                      | Bond    |
| 13-Apr-17 | Brachy: Implantation Techniques                                 | Bond    |
| 20-Apr-17 | Brachy: Systems of Implant Dosimetry                            | Bond    |
| 27-Apr-17 | Brachy: QA and Safety   | Bond    |
| 4-May-17  | Radiopharmaceutical Physics                                     | Bond    |
| 11-May-17 | Particle Therapy: Delivery, Planning & Biology                  | Carlson |
| 18-May-17 | RT Imaging: Radiography Fundamentals / Informatics              | Hodefi  |
| 25-May-17 | RT Imaging: CT and PET  | Hodefi  |
| 1-Jun-17  | RT Imaging: MRI and Ultrasound                                  | Hodefi  |
| 8-Jun-17  | Radiation Safety and Shielding                                  | Bohan   |
| 15-Jun-17 | Radiation Incidents & Bioterrorism Response Training            | Bohan   |
| 22-Jun-17 |   |         |
| 29-Jun-17 |   |         |

R. Nath June 28, 2016