CHAPTER 1 *Fundamentals* ***1***

Anatomy of an IMRT Beam ***1***
Width of MLC Leaves- Does it matter? ***5***
MLC particulars ***6***
Segmented vs. Sliding Window ***10***
Tissue Heterogeneity ***14***
Summary Points ***16***

CHAPTER 2 *Optimizer* ***17***

Optimization Screen ***17***
Desired Dose Distribution (upper left quadrant): ***18***
Field Parameters (lower left quadrant) ***24***
Fixed Jaws ***28***
Base Dose Plan ***29***
Max time and Max iterations: ***29***
Optimize (lower right quadrant): ***30***

CHAPTER 3 *Contouring Techniques* ***33***

Introduction ***33***
Defining Target Volumes ***34***
IMRT Planning Volumes vs. Disease Volumes ***35***
Contouring Target Volumes near the Skin ***38***
Defining Normal Tissues for IMRT: ***39***
Remove CT Artifacts - and Include Heterogeneity ***40***
Structures Types ***41***
Dose Limiting Annulus ***43***
Artificial Organs at Risk ***45***
Artificial Structures to Smooth IMRT Dose Distributions ***48***
Reducing "Cold Spots" ***49***
Summary Points ***49***

CHAPTER 4 *Beam Selection* ***51***

General Strategy ***51***
Beam Angles: Equally-Spaced is not always as good ***55***
Beam Angles: Non-Coplanar can improve the dose distribution ***57***
Summary Points ***60***

CHAPTER 5 *Combining IMRT Beams* ***61***

Combining Conventional and IMRT Plans ***61***
Hybrid IMRT ***63***
Summary Points ***66***

CHAPTER 6 *QA Validation* ***67***

QA Objectives ***67***
Phantom Selection ***68***
Measurement Devices ***71***
Creating a Verification Plan ***72***
QA Strategy ***75***
Summary Points ***77***

CHAPTER 7 *Import/Export* ***79***

Configuring Filters ***79***
Export Dose ***83***
Export MLC's ***84***
Export Images ***85***
Summary Points ***87***

CHAPTER 8 *Prostate Planning* ***89***

Introduction ***89***
Beam Number and Energy ***90***
Uniform PTV Coverage - Conventional dose levels ***93***
Non-Uniform PTV Coverage: Dose Escalation Example ***97***
Monitor Units ***100***
Care in Using Library Constraints ***100***
Summary Points ***101***

CHAPTER 9 *Head and Neck Planning* ***103***

Introduction: ***103***
Contouring ***104***
Number and Orientation of Beams ***107***
Summary Points ***115***

CHAPTER 10 *Breast Planning* ***117***

Introduction ***117***
Contouring the Breast CTV ***118***
PTV and "Hot Regions" ***119***
Bolus ***122***
Plan Evaluation – DVH or Isodose Line? ***122***
IMRT Tangents with Hybrid Beams ***125***
Supplementing Tangential Beams ***127***
Concomitant Boost of Tumor Bed ***131***
Skin Flash ***133***
Summary Points ***137***

CHAPTER 11 *Patient Positioning* ***139***

Head and Neck ***141***
Prostate ***141***
Lung ***141***
Summary Points ***142***

CHAPTER 12 *Quick Reference* ***143***

INDEX ***149***