

Below is the course outline for the Olympic Health Physics Didactic X-Ray Technician course. The course covers all regulatory required topics. The course is delivered online through individual modules with a self-assessment at the end of each Module.

Topics	Time
Overview – Why are we here? Review purpose of the course and function and responsibility of X-Ray Technician	15 minutes
Introduction <ol style="list-style-type: none"> 1. X-Ray History 2. Imaging Modalities 	15 minutes
Module 1 – Radiation Physics & X-Ray Physics <ol style="list-style-type: none"> 1. Electromagnetic Spectrum 2. Wave properties 3. Bohr Model – Electron shell structure 4. Excitation and Ionization 5. X-Ray & Gamma Rays 6. X-Ray Interaction 7. X-Ray Production 8. Use of kVp & mAs 9. Heat Load / Heat Units 10. Parts of the X-Ray tube / X-Ray system 11. X-Ray Equipment Operation & Control 	60 minutes
Module 2 – Imaging Science <ol style="list-style-type: none"> 1. Types of imaging receptors 2. ISO – “film or detector speed” 3. Exposure Index 4. Contrast 5. Noise 6. Grids / Bucky 7. Pixel Density 	60 minutes

8. 3D to 2D (image overlap)
9. PACS
10. Dose vs. Imaging Quality
11. Window and Leveling
12. Gray Scale Gradients

Module 3 – Radiobiology

60 minutes

1. Radiometric Quantities
2. Biological Interaction
3. Cellular Biology
4. Somatic vs. Non-Somatic
5. Acute vs. Chronic Radiation Exposure
6. Risk Models (LNT) and Risk Analysis
7. Comparative Radiation Dose Analysis
8. Case Studies of Radiography Accidents

Module 4 – Radiation Safety

30 minutes

1. Fundamentals of Radiation Safety
2. ALARA (As Low as Reasonably Achievable)
3. Time, Distance, & Shielding
4. Radiation Dose Units

Module 5 – Rules & Regulations

60 minutes

1. Federal Rules (FDA / CDRH / OSHA)
2. Dose Limits (pregnancy)
3. Radiation Dosimetry
4. Inspections
5. Licensure Categories (facilities and staff)
6. Standards of practice (ACR / Joint Commission / others)