Helical tomotherapy using the HiArt system can provide highly conformal dose distributions through the implementation of helically delivered intensity modulated radiation therapy (IMRT). The TomoTherapy HiArt system uses a 6 MV linear accelerator mounted on a ring gantry with a simultaneously translating couch. The system also provides image guidance via megavoltage CT. Since this design is significantly different than traditional medical linear accelerators, a unique quality assurance program must be implemented to thoroughly test the HiArt delivery system.

This course will provide an overview of the HiArt system components, acceptance testing and commissioning, beam “twinning” for recommissioning of an existing machine to match the TomoTherapy “gold” standard, and basic quality assurance recommendations. The use of ion chamber and diode arrays for patient-specific delivery QA will also be discussed.

Educational Objectives:
1. Understand the core concepts of helical tomotherapy.
2. Understand the commissioning process for a new HiArt system and the beam “twinning” and recommissioning of an existing HiArt system.
3. Understand the machine QA procedures for helical tomotherapy.
4. Understand the helical tomotherapy patient-specific delivery QA process, including the use of ion chamber and diode arrays.

Conflict of Interest:
Our group holds a research grant from TomoTherapy, Inc.