Abstract:
Optimized cancer radiation treatment designs seek to maximize dose to tumors while minimizing dose to any normal tissue and organs at risk (OAR) for severe complications. However, in some cases dose delivery accuracy and precision is compromised by patient breathing due to respiratory-induced motion and deformation of the radiation target. Studies on lung tumors indicate their motion trajectories vary widely in amplitude up to several centimeters depending upon location and attachment to other anatomic structures such as chest wall and bronchial tree. Compensation for tumor motion during treatment is a particularly thorny problem since there are several sources of motion for modern approaches to complex treatments. This seminar will discuss various levels of sophistication in the compensation techniques utilized for optimized radiation therapy including large tumor active breathing control, deep inspiration breath hold, abdominal compression, respiratory-gating and tumor motion tracking.

Short Biography:
Professor George Sandison is a medical physicist and a Vice-Chair of the Department of Radiation Oncology for the University of Washington. He has authored over 100 scientific publications including 80+ journal articles. Many are related to proton and other charged particle therapy. His direct research mentoring activity includes 50 post-docs and clinical residents, research assistants, graduate students and undergraduate students. He has served several universities in his highly successful 25 years of experience as a leader in clinical and academic environments. He is currently interested in problems of tumor and normal tissue motion management in radiation therapy.