Purpose:
We aim to supplement the didactic education of medical physics graduate students with a laboratory course on treatment planning systems (TPS.) TPS are ubiquitous in clinical practice and research. Physicists are responsible for development, commissioning, maintenance and QA of these increasingly complex systems. Oncologists rely on physicist expertise for the safe and efficacious TPS use. Hands-on training has been limited due in part to access to clinical TPS.

Methods:
A teaching laboratory was developed to train medical physics graduate students with 6 workstations running commercially available TPS. An upper level special topics graduate course was designed around the laboratory. It has a clinical focus and is structured by disease site to reinforce physics topics with practical relevance. Commissioning and dose algorithms are taught after students have system familiarity, enabling less software focus and greater understanding using plans to illustrate the effects of beam model parameters.

Results:
Based on student evaluations and enrollment, the class is a success. Our initial class had 11 students, and in 4 years it has doubled in size. It has become a popular staple of our graduate curriculum. The average student evaluation score (out of 5) of lecture and lab respectively are 4.74 and 4.52. These are among the highest for our department. Improvements in content and structure have been made each year based on student feedback. Additions included exercises on a third TPS and physician-taught clinical lectures to complement disease sites.

Conclusions:
This course will be a regular timetable offering. This innovative approach has been so well received so we are expanding this model to radiation oncology residents. An RSNA Education Grant has been applied for. Just as graduate students have honed their skills using the lab, medical residents will benefit from simulation exercises involving radiotherapy field design, optimization and dose evaluation.