

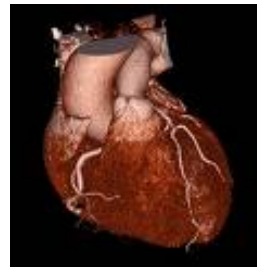
# UCF Mathematics

## Computer Tomography/Medical Imaging

Computer tomography (CT) is one of the most powerful medical imaging modalities, which provides doctors with the ability “to see inside the patient” without actually performing any surgery. Another common application of CT is nondestructive evaluation, where it is used for finding defects of some sort (e.g., cracks, holes, etc.) inside various objects without taking them apart. Yet another application of CT is security inspection (e.g., of luggage in airports).



It may not be well-known, but mathematics plays the key role in CT. A complicated mathematical algorithm takes the data collected by CT scanners and converts it to images. CT is a field, which is actively developing right now. There is a need for new image reconstruction algorithms and for the improvement of the existing ones. Mathematics involved in this area is very interesting and diverse. One can use integral transforms, pseudo-differential operators, micro-local analysis, sampling theory, etc.



Graduate students interested in this area would follow the applied mathematics track and take the following courses:

**Generalized Functions (MAP 6420)**

**Transform Methods (MAP 6424)**

**Advanced Transform Methods (MAP 6419)**

Dr. Katsevich has an active research program in this field. He is collaborating with companies such as General Electric, Toshiba, and Siemens.