The Division of Imaging Sciences & Biomedical Engineering is an internationally leading group of over 350 researchers. The Division provides up to 30 places on this intercalated BSc programme designed to give students an understanding of the theory and practice of modern medical imaging techniques and allows the participation in cutting edge research projects. The course is located at both St. Thomas’ & Guy’s hospitals and consists of four equally-weighted modules:

I Imaging with Ionising Radiation
Providing the theory, technology and clinical applications of X-rays and radionuclides.

II Imaging with Non-ionising Radiation
Providing the theory, technology and clinical applications of ultrasound and magnetic resonance.

III Computer Imaging Science & Advanced Imaging
The theory and practice of image processing

IV Research Project
Each student is allocated a project based on active research currently underway in the Division. Projects that were selected during the 2013/14 academic year are:

- Assessing the stability of functional network measures in the developing brain
- Quantification of myocardial perfusion with MRI in response to cold and exercise stress in patients with coronary artery disease
- Relationship between 18F-PET regional bone formation parameters vs. CT derived bone mineral density
- Assessment of the effect of iterative reconstruction on quantification of perfusion CT parameters in primary colorectal cancer
- Assessing neurite morphology in the developing preterm brain using diffusion magnetic resonance imaging
- Improving early imaging biomarkers for neonatal hypoxic ischaemic encephalopathy
- Do novel quantitative parameters from 18F-fluorodeoxyglucose PET scanning predict treatment response and prognosis in oesophageal cancer?
- The relationship between bone, adiposity and vascular calcification: a cross-sectional study of healthy postmenopausal women
- Electrophysiological modelling of pacemaker cells in the pulmonary veins
- Quantitative assessment of intra-testicular vascular pattern on high frequency color Doppler ultrasound examination
- Does brain volume and structure at term predict early neurodevelopmental performance in infants who were born preterm?
- Assessment of the effect of iterative reconstruction on the quantification of texture heterogeneity parameters reflecting derived from contrast enhanced CT images of primary colorectal cancer

For further information: [http://www.kcl.ac.uk/medicine/study/ug/intercalated/a-z/imagingsciences/index.aspx](http://www.kcl.ac.uk/medicine/study/ug/intercalated/a-z/imagingsciences/index.aspx)

Dr. Kawal Rhode, Course Director: email: kawal.rhode@kcl.ac.uk  tel: 02071887188 ext 53223
Entry Requirements
First time pass Part 1 & Part 2, pass current year and all SSCs
A grades in either Maths or Physics A-levels or preferably both
Interest in Medical Imaging, Interest in Research, High Motivation

Past Student Publications
All students are expected to publish their research findings in leading conference and journal proceedings. The Division provides financial support to allow students to present their work internationally.

X. Wu, R. J. Housden, N. Varma, Y. Ma, D. Rueckert and K. Rhode
“Catheter tracking in 3D echocardiographic sequences based on tracking in 2D X-ray sequences for cardiac catheterization interventions”, ISBI 2013, San Francisco, USA

“Motion correction using hierarchical local affine registration yield better imaging quality and myocardial scar characterisation from T1 map acquired with MOLLI sequence”, SCMR 2013, San Francisco, USA

F. Davnall, C. S. P. Yip, G. Liljegqvist, M. Selm, F. Ng, B. Sanghera, B. Ganeshan, K. A. Miles, G. J. Cook, V. Goh

“Validation of a Novel Method for the Automatic Segmentation of Left Atrial Scar from Delayed-Enhancement Magnetic Resonance”, MICCAI Workshop STACOM 2011, Toronto, Canada

Past Student Experiences

“The Imaging Sciences BSc required a dash of analytical thinking, a sprinkle of interest in physics and dollop of hard work. In return it gave me knowledge of the scope and complexities of modern medical imaging, a chance to work closely with some of the world’s leading experts in their field, and to make new friends from different years and different universities.”
Edward Noon, Imaging Sciences iBSc

“I found this BSc fascinating and feel that it has given me a great understanding of the science which underpins the commonly used imaging modalities. Although parts of the course are very technical, don’t let that put you off, as the maths and physics required are pretty basic and very well explained. The projects on offer were great and gave several of us the opportunity to publish and present at conferences. This BSc is not just for future radiologists (trust me, I’m not one of those!) but relevant to every area of medicine imaginable. The teaching is great and I would strongly recommend this course to anyone.”
Emily Heathfield, Imaging Sciences iBSc

“Epic”
“I thoroughly enjoyed the privilege of studying in such a world class department. The unique opportunity of getting involved with teams at the cutting edge of imaging research was second to none and being lectured by individuals at the top of their field was brilliant. The small teaching groups allow for every lecture to be more like a tutorial and the structure of the course meant that the lectures build upon one and other until a solid understanding of the topics is developed, far superior to memorizing vast numbers of random facts. Nowadays radiology is a vital tool in all areas of clinical medicine, the knowledge I gained and the ability to understand and interpret clinical images has made a huge impact on my clinical study and can only serve to enhance my career whichever field I should choose to go into”
“This BSc is second to none!”
“Despite being challenging this BSc is so well taught that in my year group 6 out of 7 of us achieved 1st class honours”
Alex Brazier, Imaging Sciences iBSc

“Choosing to take a year out and do the Radiological Sciences iBSc was the best decision I made at medical school. The programme was delivered by lecturers who are all leaders in their field, the course directors were friendly and approachable and there were a large number of top class research projects to choose from in a world leading department at St. Thomas’. Doing the BSc has allowed me to strengthen my CV, learn about a topic that you never cover in medical school and help me secure a foundation post.”
Nicholas McGlashan, Imaging Sciences iBSc

“Everyone who teaches you really wants you to do well and is willing to help you. You have an extremely high chance of being published and all the projects are good. The exam is better than most BSc’s where you have to write a long essay which can sometimes be subjectively marked. This BSc is assessed with short answer questions where there is a right or wrong answer and if you’ve revised well you can get really high marks”
Yosra Al-Beyatti, Imaging Sciences iBSc

Award profile 2012-13: 13 I, 4 IIA, 1 IIB