

390SM IMAGE PROCESSING IN PHYSICS

Aims

D1. Knowledge and understanding

Students will learn what are images, and how they are acquired, stored, modified and analysed. They will also acquire knowledge on a selection of mathematical, physical and numerical concepts and methods frequently used in imaging applications.

D2. Applying knowledge and understanding

By the end of the course, students will be able to apply the methods learned in class to a broad class of imaging problems.

D3. Making judgments

By the end of the course, students will be able to identify the techniques and concepts best adapted to a given imaging problem. Students will also have built an awareness of the limitations of these techniques, and thus apply critical thinking in the interpretation of imaging applications.

D4. Communication skills

By the end of the course, students will be able to articulate and describe imaging methods and processes with appropriate terminology, and discuss these methods and processes with experts in the field across many disciplines.

D5. Learning skills

By the end of the course, students will have developed problem solving and critical thinking abilities for rigorous interpretation, analysis, and processing of imaging procedures. Students will also be able to deepen independently their knowledge and competences on more advanced imaging concepts and techniques

Teaching Format

New concepts and methods will be introduced during class lectures, along with demonstrations using python. Group discussions and real-time quizzes will be used as immediate feedback on student understanding. Weekly reading and exercise assignments will be provided to consolidate material seen in class, and to help develop image processing skills.

Assessment

Final oral exam.