

PRACTICAL OPTICS

An Introduction to Optics and Optical Systems

22nd and 23rd April 2009

National University of Ireland, Galway

Room AO 208, Applied Optics Group, Arts and Sciences Building

Objective

This two-day course is designed to provide an understanding of the basic principles of optics and optical systems for engineers and managers in industry and support agencies who may not have a background in optics. No prior knowledge of optics is required but it is recommended that attendees have a basic training in science or engineering.

Aims of the Course

The course is designed to:

- Explain the basic principles of geometrical and wave optics
- Provide an introduction to the principles of optical design
- Apply these principles to examples of optical systems.

Who Should Attend?

The course is intended for engineers and managers in industry and supporting agencies who require knowledge of optics, either for their current projects or for future product development. It is also designed for those in companies who have to interact with suppliers of components or sub-systems that contain some optical components and for those wishing to refresh their knowledge of basic optical methods.

Learning Outcomes

This course will enable you to:

- Identify suitable light sources and detectors for your application
- Choose an illumination system
- Determine image position and magnification in an imaging system.
- Choose the right stock lenses for an optical system
- Design simple layouts for an optical system
- Calculate the maximum resolution of an imaging system
- Understand the effect of optical aberrations on an image
- Test optical components
- Determine the effect of polarisation in an optical instrument

Programme

The course will run from 9:30 a.m. on Wednesday 22nd April to 3:30 p.m. on Thursday 23rd April 2009, and consist of a total of 8 one-hour lectures, plus two short laboratory demonstration sessions and a networking event at the end of the first day. There will be ample opportunity to interact with the lecturing staff and other delegates during the course.

Wednesday 22nd April

9:30 Light Sources and Illumination
10:30 Basic Geometrical Optics
11:30 Break
12:00 Aberrations of Optics Systems
13:00 Lunch
14:00 Interferometry and Optical Testing
15:00 Laboratory Demonstrations
15:30 Break
16:00 Imaging and Resolution
17:00 Networking Event

Thursday 23rd April

9:30 Elements of Optical Design
10:30 Polarisation of Light
11:30 Break
12:00 Optical Detectors
13:00 Lunch
14:00 Laboratory Demonstrations
14:30 Discussion and Examples (based on interests of attendees)
15:30 End of Short Course. A certificate of attendance will be provided to each participant.

Course Lecturers

Prof J C Dainty is Professor of Applied Physics at NUI Galway. He obtained his PhD from Imperial College, London and has 35 years experience in teaching and research in Applied Optics. He has received many awards for his contributions to optics, including the Mees Medal and Prize of the Optical Society of America.

Dr. N. Devaney is a lecturer in the School of Physics. He has 15 years of experience in optical instrumentation projects for large astronomical telescopes, with responsibilities including design, testing and management.

Dr A Goncharov is a lecturer in the School of Physics. He received his PhD from Lund Observatory, Sweden in astronomical optical instrumentation. His present fields of interest include imaging in ophthalmology and astronomy.

Accommodation

There are many hotels and B&Bs in Galway, ranging from €40 per night upwards. Attendees are strongly recommend to stay overnight on both 21st and 22nd April to allow a prompt 9:30am start to the course each day. Details of accommodation and other facilities in Galway can be found at <http://www.galway.net/>.

Location of Short Course

The course will be held in Room AO208, in the Applied Optics Group, Physics Department, NUI Galway. Campus and Galway City maps can be found at: <http://optics.nuigalway.ie/visitus>

Parking

There is limited "pay and display" car parking available at NUI Galway at a rate of €6 per day. However you are strongly encouraged not to bring your car on campus and to walk to the Campus if at all possible.

Fee and Registration

The course fee is €750 per participant which includes refreshments, lunches, networking event and a paper copy of the lecture slides. Please register in advance by returning the form below to Emer McHugh, Applied Optics Group, School of Physics, National University of Ireland, Galway, Ireland or sending details by email to: emer.mchugh@nuigalway.ie.

This course is supported by the **BESTNet Skillnet**, contact Caoimhe Cullinane, BESTNet Network Manager, caoimhe@icbe.ie, (061) 37 17 54.

You are advised to register as soon as possible. Places will be limited in this course to provide the best possible opportunity for the participants and lecturers to interact in a productive and informal way.

I wish to attend the short course on PRACTICAL OPTICS on 22nd/23rd April 2009.

Name: _____
Organisation: _____
Address: _____
Telephone and Email: _____
Special Dietary Requirement? _____

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