

# An Introduction to Optical Design

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 optical design 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 optics
- Provide an understanding of the aberrations of optical systems
- Provide an introduction to the principles of optical design
- Describe the performance of thin lenses and doublets
- Discuss the design of some complex imaging systems.

## Who Should Attend?

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

## Programme

The course will run from 9:30 a.m. on the first day to 3:30 p.m. on the second day, and consist of a total of 9 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 with other delegates during the course.

## Draft Programme

### Day 1

9:30 Geometrical Optics 1  
10:30 Geometrical Optics 2  
11:30 Break  
12:00 Aberrations 1  
13:00 Lunch  
14:00 Aberrations 2  
15:00 Examples and Exercises  
15:30 Break  
16:00 Thin Lenses  
17:00 Networking Event

## Day 2

9:30 Achromatic Doublets  
10:30 Complex Lenses 1  
11:30 Break  
12:00 Telescopes and Adaptive Optics  
13:00 Lunch  
14:00 Complex Lenses 2  
15:00 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

*Dr A Goncharov* received his PhD from Lund Observatory, Sweden, working on optical design in the Euro50 telescope project. His present field of interest includes optical design and adaptive optics for ophthalmologic and astronomical imaging.

*Prof J C Dainty* is Science Foundation Ireland Professor 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 Department of Experimental Physics. He has several years of experience in optical instrumentation projects for large astronomical telescopes, with responsibilities including design, testing and management.

## Accommodation

There are many hotels and B&Bs in Galway, ranging from €40 per night upwards. Attendees are strongly recommend to plan on staying overnight on the night before the course begins 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/visit\\_us](http://optics.nuigalway.ie/visit_us)

## Parking

There is some "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 €850 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](mailto:emer.mchugh@nuigalway.ie).

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

*You are advised to register your interest in attending this course 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.*

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*I wish to register my interest in attending the short course on OPTICAL DESIGN.*

Name: \_\_\_\_\_

Organisation: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone and Email: \_\_\_\_\_