



University College Dublin  
Ireland's Global University

## MEngSc OPTICAL ENGINEERING (ONE YEAR FULL TIME)

Europe is a leading player in optics and photonics. The European photonics industry is growing four times faster than the European GDP, which underlines the continuing economic potential of light technologies for the future. Optical technologies play key roles in many areas including biomedical imaging, astronomy, quality control, security, sensing and telecommunications. The ready availability of multi-camera mobile phones paves the

way for new applications as computational approaches integrate with traditional optical design. Very exciting innovative technologies are rapidly emerging, driven by the ability to display and capture large amounts of real-time optical data. Optical engineers are involved in identifying and designing these systems, with the aim of improving people's lives, generating employment and creating new business opportunities.

### WHY STUDY AT UCD?



#### Tradition

Established 1854, with 160 years of teaching and research excellence



#### Global profile

UCD is ranked in the top 1% of higher education institutions worldwide



#### Global community

Over 8,500 international students from over 130 countries study at UCD



#### Global careers

Degrees with high employability; dedicated careers support; two-year stay-back visa (for non-EU students)



#### Safety

Modern parkland campus with 24-hour security, minutes from Dublin city centre

### DELIVERED BY A HIGHLY RESEARCH-INTENSIVE SCHOOL

Delivered by a highly research-intensive School composed of many internationally high-profile academics, including five IEEE fellows (Institute of Electrical & Electronic Engineers), an OSA fellow (The Optical Society) and a SPIE fellow (International Society for Optics & Photonics). This gives students the opportunity to participate in masters research projects linked with ongoing graduate research.

## COURSE CONTENT AND STRUCTURE

90 credits  
taught master's

60 credits  
taught modules

30 credits  
research project

#### Core modules include:

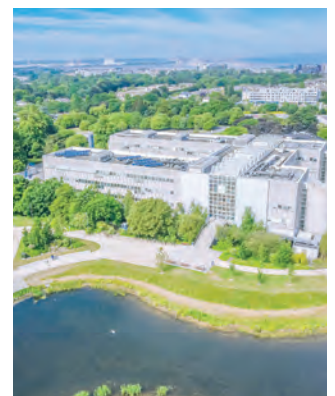
- Biomedical Signal Processing
- Optoelectronics
- Biomedical Imaging
- Professional Engineering (Mgt)
- Optical Engineering
- ME Project (Optical)

#### Optional modules include:

- Numerical Algorithms
- Optimisation Techniques for Engineers
- Nanooptics and Biophotonics
- Hyperspectral Imaging
- Entrepreneurship for Engineers
- Introduction to Imaging with MATLAB

#### Research Project

Project topics are spread across a wide range, but related to and drawing on the topics covered in the taught modules.



## CAREER OPPORTUNITIES

There are excellent job opportunities for optical engineers in the display, lighting, virtual reality, robotic and drone areas. It is a large and expanding area.

Established employers in Ireland include both multinationals and indigenous companies, e.g. Andor, Carl Zeiss, Huawei, Intel/Movidius, Qualcomm, and Sensl, to name but a few.



## APPLY NOW

This programme receives significant interest so please apply early online at [www.ucd.ie/apply](http://www.ucd.ie/apply)

## ENTRY REQUIREMENTS

- A 4-year bachelors degree with a minimum upper second class honours (NFQ level 8) or international equivalent in an Electrical, Electronic, Computer or Optical Engineering programme.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.
- Students who do not meet the IELTS requirement may wish to consider taking the Pre-Sessional or Pre-Masters Pathway. Full details <https://www.ucd.ie/alc/programmes/pathways/>

## SCHOLARSHIPS

- Dedicated scholarships for non-EU students
  - Apply for University Scholarship [www.ucd.ie/global/scholarships/](http://www.ucd.ie/global/scholarships/)
  - Apply for College scholarship [www.ucd.ie/eacollege/study/noneuscholarships](http://www.ucd.ie/eacollege/study/noneuscholarships)
- Approved by US Dept of Education for federally supported loans

## RELATED MASTER'S PROGRAMMES OF INTEREST

- ME Optical Engineering
- MEngSc Electronic & Computer Engineering
- MSc Advanced Software Engineering
- MSc Computer Science NL (Negotiated Learning)
- MSc Information Systems

## WORK IN IRELAND

- Option to stay in Ireland to seek employment and/or work for 2 years after graduating

## FEES

Fee information is available at [www.ucd.ie/fees](http://www.ucd.ie/fees)



## PROGRAMME DIRECTOR

Dr John Healy

While this degree is new within UCD, Optical Engineering is recognised as one of the most critically important technical disciplines supporting the rise of a host of new technologies. It brings together classical optics and imaging with modern mobile computational power and the associated accumulation and processing of large information-dense data sets. So, while the scientific roots of Optical Engineering are deep, the availability of new materials and hardware/software combinations is leading to a surge of interest associated with augmented/ virtual/ mixed reality, drone/robot and autonomous automobile technologies, deep learning, artificial intelligence, ubiquitous mobile phone platforms and high-speed telecommunication applications. Whether it is security, health, food or transport, optical engineers are needed and are making critical commercial contributions.

## CONTACT US

**EU Students – Katie O'Neill** E: [katie.oneill@ucd.ie](mailto:katie.oneill@ucd.ie) T: +353 1 716 1781 W: [www.ucd.ie/eacollege](http://www.ucd.ie/eacollege)

**International Students – E:** [eamarketing@ucd.ie/internationalenquiries@ucd.ie](mailto:eamarketing@ucd.ie/internationalenquiries@ucd.ie) T: +353 1 716 8500 W: [www.ucd.ie/global](http://www.ucd.ie/global)