

8. Undergraduate Photonics Programme

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Summary

The 21st Century belongs to photonics and harnessing light will be the key to life changing technologies, from energy to security, from biotechnologies to low-cost precision manufacturing, from the internet to quantum-level information processing. Many important industries, from chip manufacturing and lighting, health care and life sciences, to space, defense and the automotive sectors rely on the same fundamental mastery of light. Today photonics represents a market of hundreds billion dollars and employ millions of people worldwide.

Photonic technologies have already been pervasive in our daily lives. Optical fibres carry over 90% of telecommunication signals every day, renewable solar energy powers millions of consumers, and laser technique is renovating manufacture of a multitude of everyday products.

This thematic programme will introduce this enabling technology to students through many exciting and promising projects, some of which are industry-sponsored. For the industry-sponsored projects, the students will work with industry to design and build photonic products and learn real-world industry processes for product development. Just as an example, the projects will include design and build solar cells, energy-saving lightening systems, design and build industrial lasers, optical sensors, laser imaging and measurement, 3D displays, and among many others. On the other hand, project topics can be proposed by students. No prerequisite is required. At the end of the project, students will be able to solve real-world problems and learn how to work collaboratively to solve challenging tasks.