



2017 MAJOR – Photonics

(Qualifying Major for Bachelor of Science)

The major in Photonics includes optics and photonics. Optics is the study of the manner with which light behaves and interacts with matter, such as reflection and refraction at transparent surfaces. Photonics is the study of the generation, transmission, manipulation, control and detection of light. Photonics is interdisciplinary in nature because it combines optics and electronics, and is rapidly advancing into diverse fields such as biology, medicine, electronics, astronomy, nano-science and quantum physics. The Photonics builds on basic theory covering the generation of photons, the coursework evolves to review the principles of light propagation in optical fibres, the science and engineering underpinning lasers and semiconductor photodetectors, culminating in an analysis of the design and operation of advanced optical systems used in optical communications, machine vision and astronomy-on-a-chip, for example. The final year capstone unit for the Major prepares students for a professional career in photonics and related physics fields by giving them the opportunity to integrate their theoretical knowledge and experimental expertise in an industry setting with University partners active in photonics development and commercialisation.



The table below is a suggested first session for students beginning in Session 2, 2017. Please make your selection of units after reviewing the requirements of your award in the 2017 Handbook:

www.handbook.mq.edu.au/2017/DegreesDiplomas/Degree/Bachelor+of+Science

Suggested First Session

Session 2, 2017

Unit Code	Unit Name
MATH130 or MATH135 *	Mathematics 1E Mathematics 1A *
ACSC100 or ASTR178 or STAT170	Academic Communication in Science Other Worlds: Planets and Planetary Systems Introductory Statistics
PHYS143 ** or Elective	Physics 1B CBMS, COMP or ENGG unit at 100 level
Elective	Choose a People or Planet unit

- You must also meet the general requirements for the degree to which you will qualify.
- It may be possible to satisfy the requirements of your degree by taking a different selection of units in your first year from those suggested above.

* The prerequisite for MATH135 is a band 4 (or higher) in HSC Mathematics (or equivalent interstate or overseas secondary school study). All students who do not meet this prerequisite should choose MATH130 followed by MATH135 in 2018.

** Students with HSC Mathematics Band 4 or higher can enrol in PHYS143. Other students should enrol in PHYS

FIND OUT MORE
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Handbook.mq.edu.au

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units in 2018 following completion of MATH130 in 2017.

- Other popular electives for Photonics students include computing [COMP115, ISYS114], engineering [ENGG141], and chemistry [CBMS107, CBMS108]. Outside the Faculty of Science and Engineering, ACSC100 is a unit designed to help science students with writing skills.
- Consider what units you will want to study in second and third year. Prerequisite requirements for those units must be completed prior to enrolment in the higher unit.
- Bridging courses in mathematics are available and recommended for those without recent HSC study: <http://web.science.mq.edu.au/bridging-courses>.
- For a double major complete required units for both majors where possible in the first year. If considering a double major consult the criteria found at www.handbook.mq.edu.au/2017/Majors.
- All students must complete one People unit and one Planet unit. Criteria and available units can be viewed at www.handbook.mq.edu.au/2017/Units/Planet and www.handbook.mq.edu.au/2017/Units/People.
- You can receive specific program advice from the faculty at any stage in your degree by lodging a “Program Advice” enquiry via <http://ask.mq.edu.au>.



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