

The Hong Kong University of Science and Technology

UG Course Syllabus Template

[Course title] **Photovoltaic Materials and Devices**

[Course code] **ENEG 4130**

[No. of Credits] **3 credits**

[Any pre-/co-requisites] **no**

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Course Description

This course elaborates on the fundamental basics, manufacturing, and process/device engineering of commercial and near-commercial photovoltaic technologies from the perspectives of materials science and chemical engineering. The knowledge imparted from this course will be key to the future of chemical/materials engineers in the solar energy industry.

Photovoltaic (PV) is the most promising zero-carbon technology for electricity generation. Driven by the strong need to reduce the carbon footprint in Hong Kong and the world, the deployment of PVs on a large scale has become the trend in transforming our current energy landscape. Especially, the industry of PVs is growing in an unprecedentedly rapid manner, which creates a substantial number of job opportunities. To be ready for these unprecedented opportunities, the students are expected to not only learn the basics of PV principles, but to master the essential materials and chemical-engineering sciences in PVs. In particular, the field of PVs has experienced decades of developments, which have led to several promising technologies, respectively, named after the core materials used (Si, GaAs, CIGS, CdTe, perovskite, etc). As a future photovoltaic engineer, it becomes a mandate to master a systematic set of knowledge on these essential materials. Through this course, we expect to contribute to cultivating future chemical/materials engineers for the PV industry and widening the career path of our SUSEE and CBE students.

Assessments:

Assessment Task		Contribution to Overall Course grade (%)
Written assignment	Homework	15%
	In-class quiz	15%
Project	Report	15%
	presentation	15%
Final examination		40%

Required Texts and Materials

PPT materials will be uploaded before the lectures.