

# Solar Cell Physics, Materials, and Devices

DEEP Course Instructor

**Hiring Department:** Engineering Outreach Office, Faculty of Applied Science & Engineering

**Course:** Solar Cell Physics, Materials, and Devices

**Campus:** St George Campus

**Rate of Pay:** SGS I/II - \$47.17/hour (+4% vacation pay)

**Course Enrollment:** 25 high school students

**Date of Employment:** May 2022 - August 2022

**Class Schedule** Monday 9:00am-12:00pm, 1:00pm-3:30pm  
Tuesday-Friday 9:30am-12:00pm, 1:00pm-3:30pm

**Posting Date:** May 6, 2022

**Closing Date:** May 16, 2022

## Course Description:

In the last decade, solar generation of electricity has gone from being “the future” to the present. Whether driven by concerns of climate change, air pollution, or energy independence, solar cells have become commonplace and prices have decreased exponentially. As of 2016, more solar generated electricity infrastructure is being installed than any other single source. In this course, students will focus on the fundamental physics behind solar cells, the different types of solar cells (including next generation technologies), and their fabrication. Students will also be discussing solar cell installations, their use in architecture, and the impact of solar energy on society. Students will learn both in the classroom and on-site through demonstration, experimentation, problem-solving, and fabrication of a simple solar cell

## Position Description:

To provide high school students with a unique and challenging learning experience during the program, it is preferred that all DEEP instructors are currently in pursuit of either a Masters or PhD degree at the University of Toronto and have previous teaching experience. Instructors generally come from the Faculty of Applied Science & Engineering at the University of Toronto; however, previous instructors have also come from other professional faculties including the Faculty of Pharmacy and the Faculty of Medicine, and other universities. Instructors of this calibre serve as an inspiration for high school students while providing them with a taste of the university experience. The Engineering Outreach Office also welcomes applications from recent alumni.

- All instructors must attend both training sessions. The first training session will take place in early May. The second training session will take place in mid-June. Full details will be shared with successful candidates.
- The instructor will receive a full course outline and detailed activity descriptions for their assigned course. Up to 3 hours of instructor-created activities may be included. The instructor acknowledges that the content of the course will conform to the description of the course on the Engineering Outreach Office website and any other publications.
- Instructor-created activities must be approved by the Outreach Coordinator and the department’s Safety Officer. Forms (including detailed materials/equipment list) must be completed by the deadline (TBD) for all instructor-created activities.
- The instructor will be present in class at all times and will facilitate the entire course. This includes arriving at 8:00am on the first day of the course and 8:30am for all other days. At the end of the day, instructors are dismissed after a daily debrief (4:00pm).

- The instructor is responsible for conducting lessons, facilitating class discussion and/or debate, conducting/demonstrating laboratory and design activities, and providing in-class assistance to the participants. Additionally, the instructor will lead any applicable course field trips. The instructor is responsible for setting-up lab equipment and audiovisual equipment as required for their course.
- The instructor is required to meet with the course counsellors and content specialists prior to the specified date set by the Outreach Coordinator, and remain in close communication with the staff until the delivery of the course.
- Each instructor is required to meet with a High School Team Leader and Materials Team at least once in May or June to review course logistics, materials, and facilities.

#### **Qualifications:**

- MSc or PhD candidate preferred, ideally at U of T Engineering.
- Applicants should have a strong record of teaching, particularly using engaging teaching methods.
- Applicants must be able to demonstrate considerable depth of knowledge and experience in Photonics, Physics.
- Relevant skills, as applicable to the course.
- The applicant must be able to speak to a group (25 students) in a clear voice, and explain concepts clearly.

#### **Other:**

- If an offer of employment is extended, it will be conditional upon the submission of a police records check clearance letter AND proof of completion of mandatory online U of T training (AODA, WHMIS, Workplace Safety).
- There are no marking or evaluation assignments/duties in DEEP; however, the instructor may choose to produce problem sets, non-marked mini-assignments, or reading for the class depending upon the nature of the particular course.
- Instructors are required to be part of the opening (9:00am-9:30am on the first day) and closing (3:00pm-3:30pm on the last day) ceremonies as directed by the Program Coordinator.
- Instructors are required comply with any safety procedures outlined in training.
- Instructors are expected to communicate any and all concerns and incidents to the Program Coordinator immediately. Documentation related to any incidents will be promptly completed by instructors.
- Instructors are required to complete all course feedback forms in a timely fashion and submit them to the Program Coordinator at the completion of each course.
- Instructors are encouraged to offer support and guidance, and demonstrate leadership to all program participants being mindful that they are representing the Faculty of Applied Science & Engineering and the University of Toronto.

#### **How to Apply:**

Applicants are required to fill out the [application form](#). A cover letter and resume/CV must be uploaded within the application form. Short link to application form: <https://forms.gle/7UPCpXswh7PvNqGY7>

The University of Toronto is strongly committed to diversity within its community and especially welcomes applications from racialized persons / persons of colour, women, Indigenous / Aboriginal People of North America, persons with disabilities, LGBTQ persons, and others who may contribute to the further diversification of ideas.

The University of Toronto invites all qualified applicants to make application.

Preference in hiring shall be given to Graduate Students enrolled in the School of Graduate Studies of the University of Toronto or those who have made application to be enrolled in the School of Graduate Studies of the University of Toronto.

The University strives to be an equitable and inclusive community, and proactively seeks to increase diversity among its community members. Our values regarding equity and diversity are linked with our unwavering commitment to excellence in the pursuit of our academic mission. The University is committed to the principles of the Accessibility for Ontarians with Disabilities Act (AODA). As such, we strive to make our recruitment, assessment and selection processes as accessible as possible and provide accommodations as required for applicants with disabilities. If you require any accommodations at any point during the application and hiring process, please contact [uoft.careers@utoronto.ca](mailto:uoft.careers@utoronto.ca).

Duties of this position shall be performed at the campus on which the position is located. Where the duties are intended to be performed at another location, such other location will be specified in the posting.