



Module Synopses (Academic Year 2021)

Subject	H ₃ Module Title	Pre-Requisite H ₂ Subject	Preclusion(s)	Host Centre(s)	Page
Biology	Molecular Biology	H ₂ Biology	MOE H ₃ Biology	HCI	1
Physics	Semiconductor Physics & Devices	H ₂ Physics	MOE H ₃ Physics	HCI	2
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MOLECULAR BIOLOGY

Host Centre: Hwa Chong Institution (HCI)

Pre-requisite: H2 Biology

Preclusion: This course cannot be offered together with MOE H3 Biology

MOLECULAR BIOLOGY focuses on the areas of *Biomolecules* and *Recombinant DNA Technology*.

Biomolecules explores the 3-dimensional structure of biomolecules and offers insights into forces that govern their structure and functions. Students will learn to assess databases and software to analyse and to visualise the 3-D structures of biomolecules.

Recombinant DNA Technology introduces modern biotechnology concepts and methodologies, which includes DNA/protein manipulation and analysis, mass spectroscopy and nuclear magnetic resonance (NMR). Students will also be introduced to biomedical technologies such as stem cell research, as well as the generation of knockout/transgenic animals.

The course will be conducted through lectures, tutorials and laboratory sessions (computer & wet-laboratory).

Assessment will be based on the following components:

- Experimental Competency
- Wet-Laboratory Practical Report
- One 2½-hour written Final Examination

Direct any further module-specific enquiries to TalentOutreach@ntu.edu.sg.

SEMICONDUCTOR PHYSICS & DEVICES

Host Centre: Hwa Chong Institution (HCI)

Pre-requisite: H2 Physics

Preclusion: This course cannot be offered together with MOE H3 Physics

SEMICONDUCTOR PHYSICS & DEVICES is designed to stimulate students' interest in science and engineering, and to help them broaden their educational experience. It is intended for students wishing to pursue deeper studies in Physics and Semiconductors.

Students enrolled in the course will learn the key theorems of semiconductors and the operating principles of semiconductor devices. Hands-on sessions on semiconductor materials and devices will be provided. Through this module, students will also acquire an understanding and appreciation of the driving force behind the convergence of semiconductor technologies, which is imperative to our daily life, and its evolution.

The course will be conducted through lectures, tutorials and laboratory sessions.

Assessment will be based on the following components:

- Laboratory Assignments (Report & Viva)
- Two 1-hour written Mid-Term Tests
- One 2½-hour written Final Examination

Direct any further module-specific enquiries to ***TalentOutreach@ntu.edu.sg***.

Programme Information

Subject	H3 Module Title	Pre-requisite H2 Subject	Venue	Lesson Schedule	Assessment	Tests & Examination Schedule	
Biology	Molecular Biology	H2 Biology	HCI	<u>Lectures / Tutorials</u> Friday: 4:00pm – 7:30pm <u>Laboratory</u> 16 Jan 2021 to 27 Feb 2021 Saturday: 9:00am – 12.30pm	<ul style="list-style-type: none">Experimental competencyWet-laboratory practical reportFinal examination	Report Submission	9 April 2021 Friday
						Exam	10 May 2021 Monday 2.00pm – 4.30pm
Physics	Semiconductor Physics & Devices	H2 Physics	HCI	<u>Lectures</u> Thursday: 4:00pm – 6:30pm <u>Tutorials</u> Monday: 3:00pm – 5:00pm; <i>OR</i> Monday: 5:00pm – 7:00pm <i>OR</i> Tuesday: 3:00pm – 5:00pm; <i>OR</i> Tuesday: 5:00pm – 7:00pm <u>Laboratory</u> Refer to schedule issued by lecturer	<ul style="list-style-type: none">Laboratory assignments (report & viva)Term testsFinal examination	Test 1	23 March 2021 Tuesday 5.15pm – 6.15pm
						Test 2	27 April 2021 Tuesday 5.15pm – 6.15pm
						Exam	11 May 2021 Tuesday 2.00pm – 4.30pm