

MSE8001: SURVIVAL SKILLS FOR RESEARCH SCIENTISTS

Effective Term

Semester A 2025/26

Part I Course Overview

Course Title

Survival Skills for Research Scientists

Subject Code

MSE - Materials Science and Engineering

Course Number

8001

Academic Unit

Materials Science and Engineering (MSE)

College/School

College of Engineering (EG)

Course Duration

One Semester

Credit Units

2

Level

R8 - Research Degree

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

Nil

Precursors

Nil

Equivalent Courses

AP8001 Survival Skills for Research Scientists

Exclusive Courses

Nil

Part II Course Details

Abstract

The course is aimed at providing students with tailored research skills for scientific research student and prepare them for PhD study and future academic career. In details:

- 4 hours teaching for skills of writing a good research paper - how to think about writing, telling research story, logic presentation, and perspectives.
- 2 hours of teaching for presentation skills of scientific data including figure, graph, table and scheme, as well as common mistakes to avoid.
- 2 hours teaching for presentation skills for conference talk including PowerPoint preparation, time management, and answering questions.
- 2 hours teaching for skills of efficient literature search and management of bibliographies and references.
- 2 hours teaching for writing skills of abstracts for conferences and journals.
- 2 hours teaching for knowledge of research funding and how to obtain them. Explain the funding structures of US, Hong Kong and mainland China; introduce the writing skills of research proposals for Hong Kong and mainland research funds.
- 2 hours teaching for research ethics, including plagiarism, data fabrication, attribution, IP, conflict of interest, and research authorship.
- 10 hours of student presentation for a mock conference presentation, focusing on showcasing the skills of telling scientific story, data presentation, concept presentation, and answering question in a conference.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Demonstrate skills in writing abstract for journal and conference papers.	25		x	x
2	Demonstrate skills in literature search and reference management.	5		x	x
3	Demonstrate skills in preparing and delivering good seminar/conference presentation.	30	x	x	x
4	Demonstrate skills in presenting scientific data including figure, graph, table and scheme.	20	x	x	x
5	Demonstrate skills in writing research proposal for Hong Kong and mainland funds.	20	x	x	x

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Learning and Teaching Activities (LTAs)

LTAs		Brief Description	CILO No.	Hours/week (if applicable)
1	Lectures	Student will engage in lecture activities about common research skills and how to apply them in practical research activities.	1, 2, 3, 4, 5	16/semester
2	Presentations	Student will engage in mock presentation in a conference, demonstrating skills in forming scientific logic, data presentation time management, and answering questions.	2, 3, 4	10/semester

Assessment Tasks / Activities (ATs)

ATs		CILO No.	Weighting (%)	Remarks ("- for nil entry)	Allow Use of GenAI?
1	Assignment	1, 2, 4, 5	60	-	No
2	Presentation	2, 3, 4	40	-	Yes

Continuous Assessment (%)

100

Assessment Rubrics (AR)**Assessment Task**

Assignment 1 (applicable to students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Writing an abstract for a conference submission

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not reaching marginal level

Assessment Task

Assignment 2 (applicable to students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Writing a dummy research proposal for RGC Hong Kong

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not reaching marginal level

Assessment Task

Presentation (applicable to students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Skilful presentation of research work. This includes preparation of slides and effective presentation techniques

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not reaching marginal level

Assessment Task

Assignment 1 (applicable to students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

Writing an abstract for a conference submission

Excellent

(A+, A, A-) High

Good

(B+, B) Moderate

Marginal

(B-, C+, C) Basic

Failure

(F) Not reaching marginal level

Assessment Task

Assignment 2 (applicable to students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

Writing a dummy research proposal for RGC Hong Kong

Excellent

(A+, A, A-) High

Good

(B+, B) Moderate

Marginal

(B-, C+, C) Basic

Failure

(F) Not reaching marginal level

Assessment Task

Presentation (applicable to students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

Skilful presentation of research work. This includes preparation of slides and effective presentation techniques

Excellent

(A+, A, A-) High

Good

(B+, B) Moderate

Marginal

(B-, C+, C) Basic

Failure

(F) Not reaching marginal level

Part III Other Information

Keyword Syllabus

- Research ethics (plagiarism, data fabrication, attribution, IP, conflict of interest, authorship)
- Preparing and delivering a conference presentation
- Writing an abstract for journal and conference paper
- Writing research proposal for General Research Fund
- Presenting Scientific data
- Writing research manuscript.

Reading List**Compulsory Readings**

Title	
1	Goodlad, S, 1996: Speaking Technically. Imperial College Press, 112pp.
2	Holtom, D and E Fisher, 1999: Enjoy Writing Your Science Thesis or Dissertation! Imperial College Press, 278pp.
3	Yang, J T, 1995: An Outline of Scientific Writing. World Scientific, 160pp.

Additional Readings

Title	
1	N/A