Subject Description Form

Subject Code	ELC3525
Subject Title	**Scientific Communication for BME Students**
Credit Value	2
Level	3
Pre-requisite	LCR English subjects
Objectives	This subject aims to develop the English language and communication skills required for BME students to discuss, organize, report and present scientific studies in writing and speaking.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a. Analyze data critically and integrate sources strategically into scientific communication; b. Communicate ideas and discipline concepts clearly and concisely in written and spoken formats; c. Express information coherently and concisely appropriate to the intended context and audience; and d. Employ persuasive language and communication strategies to construct arguments To achieve the above outcomes, students are expected to use appropriate language to the context, select information critically, present and support stance and opinion, and master language and communication patterns in a professional manner.
Contribution to Programme Outcomes (Refer to Part I Section 10)	▪ Programme Outcome 11: Demonstrate an ability to communicate effectively and advise clients, professional colleagues and other members of the community. (Teach and Practice)
Subject Synopsis / Indicative Syllabus	*Synopsis* This subject is designed to train BME students in various aspects related to introducing scientific studies, organizing data and research materials, and exhibiting study results. By providing a comprehensive understanding of scientific communication, it aims to enhance the ability of students to effectively communicate their ideas, findings, and methodologies to the scientific community.

Subject Synopsis / Indicative Syllabus	*Indicative Syllabus* The content is indicative. The balance of the components, and the corresponding weighting, will be based on the specific needs of the students. 1. Laboratory Reports ▪ understanding the experiment's theme ▪ introducing the background of the experiment ▪ reviewing, synthesizing and critiquing sources and previous studies critically ▪ identifying and stating the experiment's objective(s) clearly ▪ organizing equipment and materials for the experiment ▪ describing experimental procedures concisely ▪ explaining experimental methods chronologically ▪ presenting results of the experiment logically and accurately ▪ analyzing key findings and discussing their implications as well as their causal relationships logically and scientifically by referring to the results appropriately ▪ exchanging opinions and justifying ideas with peers professionally (for Peer Review) ▪ applying relevant theories to establish and/or reinforce views persuasively ▪ reflecting on the experiment and examining factors contributing to the results ▪ summarizing the experiment's objectives and outcomes 2. Oral Presentations on Scientific Projects ▪ Understanding the presentation purposes ▪ selecting appropriate content and evidence ▪ presenting justifications critically related to the selected, researched, and modified product design ▪ structuring content mindfully and scientifically for comparison of product designs based on reasonably chosen information ▪ adapting language and style appropriate to the purpose, context, and intended audience ▪ employing advanced language and communication strategies to convey meaning accurately, appropriately, and persuasively ▪ speaking with clarity (including clear pronunciation), fluency and confidence ▪ using effective verbal and non-verbal communication strategies ▪ creating and using visual aids to support the spoken message

Teaching/Learning Methodology

The study method is primarily seminar-based. Activities include teacher input as well as individual and group work involving drafting, improving texts and speaking practices. Students will be referred to information on the Internet, a range of AI platforms, and the ELC's Centre for Independent Language Learning.

Learning materials mainly developed by the English Language Centre in collaboration with BME are used throughout this course. Additional reference materials will be recommended as required.

Assessment Methods in Alignment with Intended Learning Outcomes

Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)				
		a	b	c	d	
1a. In-class Peer Review	10%	√	√	√	√	
1b. Out-of-class Individual Laboratory Report	35%	√	√	√	√	
2. In-class Individual Oral Presentation of the Scientific Project	55%	√	√	√	√	
Total	100 %					

Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

Assessment 1
This assessment is based on the information provided by the BME programme leader. Students will need to conduct a theme-based laboratory experiment provided by BME. After collecting data from the experiment, they will present their findings as part of the ELC's assignment.

1a
Prior to submitting the full laboratory report, students will participate in an in-class peer review session in Week 6. They will critically assess their partners' draft reports, identify problems and suggest improvements through a peer-to-peer discussion. In the end of this peer review session, students will provide written feedback for their partners on a shared feedback form that will be assessed by the subject teacher. On the shared feedback form, students should name a total of five problems and/or areas for improvement, and then provide recommendations. A student who receives a "pass" grade should be able to provide constructive feedback and relevant recommendations on the shared feedback form.

1b
Students should submit their laboratory reports that contain all sections in the correct order as explained in Unit 1. They should provide both in-text referencing and an end-of-text reference list if they have used any sources. The report should be between 500 and 600 words long, excluding the cover page, graphics, endnotes, reference list and appendixes.

	Assessment 2 This assessment is based on the BME group project proposal. Students and their group members will discuss the same topic already approved by BME. Each student will then complete this assessment task individually even though he/she should still work in a group setting. They should strictly follow the BME teachers' instructions on this scientific project and the requirements. In general, students should communicate expectations with reference to the main project guidelines set out by BME; negotiate in a group setting regarding the engineering product structure, and its functions electrically and electronically; and encompass engineering design process, their formulated solutions, and computer-model simulation, design and re-design. Students will be provided an opportunity to interact as a group during an ELC's consultation in Week 11 that allows them to fine-tune their work focus, and identify analytical as well as persuasive elements appropriate to their presentations. During Week 12/13, the BME teachers will collaborate with the ELC teacher to assess the oral presentation by each student. Each student will have 6 minutes to convey his/her project idea persuasively during the presentation. Visual aids, such as PowerPoint slides, should accompany the presentation. This subject adopts the method of 100% continuous assessment. Students' writing and speaking skills are evaluated through the assessment tasks designed to achieve the learning outcomes. In accordance with the competency-based assessment approach, students are assessed for their ability to clearly structure, sequence, integrate, and connect their output; their ability to analyze scientifically-justified sources and their relevance; and the persuasiveness of their communication strategies; as well as their appropriacy in reflecting the ideas and language used in the two assessment tasks above.	
Student Study Effort Expected	Class contact:	
	▪ Seminars	26 Hrs.
	Other student study effort:	
	▪ Classwork-related and assessment related preparation and self-access work	52 Hrs.
	Total student study effort	78 Hrs.
Reading List and References	**Required Reading** Subject materials are prepared by the English Language Centre. Additionally, students have access to extra reading materials pertaining to professional scientific communication through the Centre for Independent Language Learning (CILL). They are free to attend workshops and use professional services such as Writing Assistance Programme (WAP) and Speaking Assistance Programme (SAP) provided by CILL. **Recommended Readings** ▪ Alley, M. (2013). *The craft of scientific presentations critical steps to succeed and critical errors to avoid* (2nd ed.). Springer. ▪ Dionne, J. P. (2021). *Presentation skills for scientists and engineers: The slide*	

	master (1st ed.). Springer International Publishing AG. https://doi.org/10.1007/978-3-030-66069-7 ▪ Gilpin, A. A. (2000). A guide to writing in the sciences. In *A guide to writing in the sciences* (1st ed.). University of Toronto Press. https://doi.org/10.3138/9781442627611 ▪ Lobban, C. S., & Schefter, M. (2017). *Writing undergraduate lab reports: A guide for students*. Cambridge University Press. https://doi.org/10.1017/9781316338575 ▪ Sahin, M., Fidel, H., & Perez-Castillejos, R. (2021). *Instrumentation handbook for biomedical engineers* (1st ed., vol. 1). CRC Press. https://doi.org/10.1201/9780429193989 ▪ Smalheiser, N. (2017). *Data literacy: How to make your experiments robust and reproducible* (1st ed.). Elsevier Science. https://doi.org/10.1016/C2016-0-01275-5 ▪ Zanders, E. D., & MacLeod, L. (2018). *Presentation skills for scientists: A practical guide* (2nd ed.). Cambridge University Press.
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