Sample Brief Course Description	
Course title	Engineering Materials for Renewable Energy Systems
Course code	PHYS 276
College	Engineering
Department / Program	Electrical/Energy Engineering
Year/ Level	3/5
Course Type	**A.** ☐ University ☐ College ☐ Department ■ Program ☐ Others b. ■ Required ☐ Elective
Credited Hours	3 credit hours
Contact Hours	(LT:2, LB:2 ,TR:0)
Pre-requisites (if any)	PHYS 102/CHEM 103
Co-requisites (if any)	None
Course description	Materials properties typically limit the performance that can be achieved in generation, transport, and utilization of energy. The course will first lay down the background knowledge of materials science, which is built upon entry-level chemistry and physics. Namely, the course will cover atomic bonding, crystal structure

	and defect structure, and their relationship with material properties. It also includes phase diagrams and alloys, mechanical properties and material failure modes. This knowledge of materials science will be carried on throughout the course as the rationale for materials selection and engineering. It will specifically discuss the electrical, mechanical, thermal, chemical, optical and processing properties of material in renewable energy systems; solid state device characteristics and their material properties, and engineering applications. It will cover topics on The laboratory part of this course provides practical-based learning of the following: Materials issues in renewable energy systems will be studied by characterizing electrical, magnetic, chemical, optical, and mechanical properties of materials.
Course Main Objectives	After successful completion of this class, the students will be able to: 1.aquire the basic knowledge of materials science and its use in energy technologies, 2. The students will be able to use material properties to estimate the critical performance metrics of energy devices , 3. The students will better understand the critical energy challenges facing mankind and the role of materials in addressing the challenges.
Learning Outcomes	**Knowledge and Understanding** To understand the basic material properties
	Skills: to apply the basic principles of material science to engineering problems in renewable energy systems.
	Values: to integrate the materials characteristics and evaluate the need for material development within energy systems.

References:

https://seng.hkust.edu.hk/sites/default/files/IMCE/UG/Course%20Syllabus/Fall_2021-2022/MECH3110_Fall%2021-22.pdf

https://www.sharjah.ac.ae/en/academics/Colleges/eng/dept/sre/Pages/BACHELOR-OF-SCIENCE-IN-SUSTAINABLE-AND-RENEWABLE-ENERGY-ENGINEERING.aspx

https://courses.cornell.edu/preview_course_nopop.php?catoid=31&coid=498270