SCME 381 Research Laboratory in Materials Science and Nano Engineering I (1 credit)

Academic Year 2022

Class Schedule: Friday afternoons (1:30-4:20 pm)

Room: SC1-255 (lab), SC1-157 (lecture room)

Coordinator: Assoc. Prof. Rakchart Traiphol (email: rakchart.tra@mahidol.ac.th)

Instructors: Assoc. Prof. Rakchart Traiphol (email: rakchart.tra@mahidol.ac.th)
Assist. Prof. Toemsak Srikhirin (email: toemsak.sri@mahidol.ac.th)
Dr. Tanant Waritanant (email: tanant.war@mahidol.edu)
Assoc. Prof. Taweechai Amornsakchai (email: taweechai.amo@mahidol.ac.th)

Course Description: This course aims to impart knowledge about the preparation and characterisation of several important classes of materials. Students will undertake a series of practical experiments, and interpret and share results by way of report writing, group discussions, and class presentations.

Grading Policy: Student evaluation is in accordance with the rules and regulations of the Faculty of Science, Mahidol University. Letter grades of A, B+, B, C+, C, D+, D, and F will be given according to the student's score. Course assessment will be based on the following:

Attendance/Participation	**35%**
Assignments/reports	**35%**
Presentation	**30%**

Reference Materials
Materials as given by instructors

Class Schedule

	Topic	Hours	Teaching Methods/multimedia	Instructor
1 19/8/22	Introduction, orientation and safety precautions	**3**	Activities: Lecture class Media: PowerPoint Presentation	Assoc.Prof Rakchart
2 26/8/22	Synthesis of ZnO nanoparticles: Effects of precursors and solvent media	**3**	Activities: Laboratory Media: PowerPoint Presentation	Assoc.Prof Rakchart
3 2/9/22	Synthesis and characterization of polydiacetylene (PDA) and ZnO nanocomposites	**3**	Activities: Laboratory Media: PowerPoint Presentation	Assoc.Prof Rakchart
4 9/9/22	Synthesis and characterization of polydiacetylene (PDA) and ZnO nanocomposites	**3**	Activities: Discussion Media: PowerPoint Presentation	Assoc.Prof Rakchart
5 16/9/22	Lab discussion/presentation/the utilization of ZnO nanoparticles and PDA/ZnO nanocomposites in different aspects	**3**	Activities: Discussion Media: PowerPoint Presentation	Assoc.Prof Rakchart
6 23/9/22	Mechanical/tensile testing of thermosetting/thermoplastic/elastomer	**3**	Activities: Discussion Media: PowerPoint Presentation	Assoc. Prof. Taweechai/ Assist. Prof. Toemsak
7 30/9/22	Mechanical/tensile testing of thermosetting/thermoplastic/elastomer	**3**	Activities: Laboratory Media: PowerPoint Presentation	Assoc. Prof. Taweechai/ Assist. Prof. Toemsak
Oct 3-7, 2022	Mid-term			
9 14/10/22	Mechanical/tensile testing of thermosetting/thermoplastic/elastomer	**3**	Activities: Laboratory Media: PowerPoint Presentation	Assoc. Prof. Taweechai/ Assist. Prof. Toemsak
10 21/10/22	Lab discussion/presentation/ the utilization of these polymers	**3**	Activities: Discussion Media: PowerPoint Presentation	Assoc. Prof. Taweechai/ Assist. Prof. Toemsak
11 28/10/22	Crystal optics – optical anisotropy, materials birefringence, refractive indices, and Brewster's angle	**3**	Activities: Discussion Media: PowerPoint Presentation	Dr. Tanant
12 4/11/22	MU Vichakarn (no class)			Dr. Tanant
13 11/11/22	Optical fiber – Optical fiber materials and internal structure, single and multimode optical fiber, numerical aperture	**3**	Activities: Laboratory Media: PowerPoint Presentation	Dr. Tanant

14 18/11/22	Lab discussion/presentation/ the utilization of these optical phenomenon	**3**	Activities: Laboratory Media: PowerPoint Presentation	Dr. Tanant
Dec 6-16, 2022	Final exam			