Course Syllabus
SCME321 Principle of Polymer Science and Processing

Class Schedule: **Tuesday:** 9.30 a.m. – 12.30 p.m. **Room:** online/SC1-159
Instructors: Assoc. Prof. Dr. Supa Wirasate / Assoc. Prof. Dr. Chakrit Sirisinha / Assoc. Prof. Dr. Kalyanee Sirisinha

Google Classroom Class code: toskewh
All students should join google classroom by 9 Aug 2021.
Please use MAHIDOL.EDU account only.
All announcements will be made via google classroom.

Course Outline:

Week	Topic	Hours	Teaching Methods/multimedia	Instructor
1 (10 Aug. 21)	Introduction -Molecular weights and Sizes -Polymer synthesis	**3**	Activities: Lecture Media: PowerPoint Presentation	Dr. Supa Wirasate
2 (17 Aug. 21)	Chain structure and Configuration of polymers	**3**	Activities: Lecture Media: PowerPoint Presentation, structure model	Dr. Supa Wirasate
3 (24 Aug. 21)	Structure of polymers -Polymer crystal -Semi-crystalline polymers -Amorphous polymers -Elastomers	**3**	Activities: Lecture Media: PowerPoint Presentation, Crystal structure model	Dr. Supa Wirasate
4 (31 Aug. 21)	Transition temperature of polymers -Crystallization and melting -Glass transition	**3**	Activities: Lecture Media: PowerPoint Presentation, VDO	Dr. Supa Wirasate
5 (7 Sep. 21)	Polymer Viscoelasticity properties -Creep -Stress relaxation	**3**	Activities: Lecture Media: PowerPoint Presentation, test pieces	Dr. Supa Wirasate
6 (14 Sep. 21)	Time-Temperature superposition	**3**	Activities: Lecture Media: PowerPoint Presentation	Dr. Supa Wirasate
7 (21 Sep. 21)	Mechanical behaviour of polymers	**3**	Activities: Lecture Media: PowerPoint Presentation, Polymer samples	Dr. Supa Wirasate
8 (28 Sep. 21)	Polymer Rheology	**3**	Activities: Lecture Media: PowerPoint Presentation	Dr. Chakrit Sirisinha
9 (5 Oct. 21)	*Midterm Exam*	**3**		
10 (12 Oct. 21)	Polymer mixing and	**3**	Activities: Lecture Media: PowerPoint	Dr. Kalyanee

	compounding		Presentation	Sirisinha
11 (19 Oct. 21)	Mixing mechanism/ Characterization of mixing/ Mixing and compounding machinery	3	Activities: Lecture Media: PowerPoint Presentation	Dr. Kalyanee Sirisinha
12 (26 Oct. 21)	Processing lab tour	**3**	Activities: Lab tour Media: Processing machines/VDO	Dr. Kalyanee Sirisinha
13 (2 Nov. 21)	Shaping process Extrusion process/ blown film process/extrusion coating	**3**	Activities: Lecture Media: PowerPoint Presentation, VDO	Dr. Kalyanee Sirisinha
14 (9 Nov. 21)	Shaping process Thermoforming/compression moulding/	**3**	Activities: Lecture Media: PowerPoint Presentation	Dr. Kalyanee Sirisinha
15 (16 Nov. 21)	Shaping process blow moulding/ injection moulding	**3**	Activities: Lecture Media: PowerPoint Presentation/VDO	Dr. Kalyanee Sirisinha
16 (23 Nov. 21)	Polymers and the circular economy model	**3**	Activities: Lecture Media: PowerPoint Presentation	Dr. Kalyanee Sirisinha
17 (30 Nov. 21)	*Final Exam*	**3**		

** Schedule will remain subject to change dependent on the changing circumstances of COVID-19.

Evaluation: Attendance, homework, quiz 30 %

Exam (Midterm 35%, Final 35%) 70%

Total 100 %

Evaluation of this course is performed according to Mahidol University regulations and Faculty of Science announcement related to bachelor's degree education. The following grade symbols, A, B+, B, C+, C, D+, D, and F, with criteria are given in the below Table:

Score (%)	Grade
75-100	A
70-74	B+
64-69	B
58-63	C+
52-57	C
46-51	D+
40-45	D
0-39	F

Students will pass this course when they get at least grade D.

References:

1. W. Michaeli, Plastics Processing, Hanser, 1992.
2. S. Franssila, Introduction to Microfabrication, John Wiley & Sons, 2010.
3. L. H. Sperling, Introduction to Physical Polymer Science, 1993.
4. R. J. Young and P. A. Lovell, Introduction to Polymers, Chapman & Hall, 1991.