

<b>Course Code and Title</b>	<b>MS7052 Surfaces and Colloids</b>
	<p><b>Summary of course content</b> <i>(please note that this information provided will also be uploaded to the web for viewing at large)</i></p> <p>This short course is intended to acquaint students with the fundamentals of colloids and surfaces. Students will learn about theories of surface wetting, colloidal forces and stability of colloidal particles. This is a must for students working in nanoparticles, surfaces and interfaces of materials. The emphasis will be on practical applications of colloids.</p> <ul style="list-style-type: none"> <li>• <u>Introduction</u> <ul style="list-style-type: none"> <li>a. Introduction to Surfactants</li> <li>b. Micellization</li> </ul> </li> <li>• <u>Forces between colloidal particles</u> <ul style="list-style-type: none"> <li>a. Intermolecular forces</li> <li>b. Colloidal forces</li> </ul> </li> <li>• <u>Surfactant systems</u> <ul style="list-style-type: none"> <li>a. Phase behaviour</li> <li>b. Microemulsions</li> <li>c. Micelles and mixed micelles</li> <li>d. Novel surfactants</li> </ul> </li> <li>• <u>Wetting on surfaces</u> <ul style="list-style-type: none"> <li>a. Surface tension</li> <li>b. Adsorption at the air-water interfaces</li> <li>c. Wetting agents</li> </ul> </li> <li>• <u>Polymers and Surfactants</u> <ul style="list-style-type: none"> <li>a. Regular polymer solutions Theory</li> <li>b. Theology</li> <li>c. Surfactant – polymer system</li> </ul> </li> <li>• <u>Applications</u> <ul style="list-style-type: none"> <li>a. Foaming of surfactant solutions</li> <li>b. Emulsions and emulsifiers</li> <li>c. Microemulsion for oil and soil removal</li> <li>d. Chemical reactions in heterogeneous media</li> </ul> </li> </ul>
	<p><b>Rationale for introducing this course</b></p> <p>To offer an in-depth coverage of the fundamentals and applications of colloidal systems.</p>

	<b>Aims and objectives</b>	
	<ul style="list-style-type: none"> <li>• Acquaint student with fundamentals of colloids and surfaces</li> <li>• Applications of colloids</li> </ul>	
<b>Assessment</b>	Continual assessment No Exam Others: Project	60% 0% 40%
	Total	100%
<b>To be offered with effect from</b> (state Academic Year and Semester)	Academic Year 2011/2012, Semester 2	
<b>Cross Listing</b> (if applicable)	Ideally this course can be cross-listed with MSE, SBS, SCBE	
<b>Prerequisites</b> (if applicable)	A basic course in Thermodynamics.	
<b>Preclusions</b> (if applicable)		
<b>Mode of Teaching &amp; Learning</b> (Lectures, regular tests, Q&A, problem-based learning)	Lectures, projects and practical work.	
<b>Basic Reading List</b> <ul style="list-style-type: none"> <li>• <b>Compulsory Reading</b></li> <li>• <b>Supplementary Reading</b></li> </ul>	K. Holmberg, B. Jonsson, B. Kronberg and B. Lindman, Surfactants and Polymers in Aqueous Solution, 2 <sup>nd</sup> ed., Wiley, Chichester, 2003	
<b>Maximum Class Size</b>	30	
<b>Hours of Contact/Academic Units</b>	39 hours / 3 AU	
<b>Workload Per Week</b> (The workload for a 3-AU course must add up to 39 hours of contact hours)	Lecture hours per week	3
	Tutorial hours per week	0
	Laboratory hours per week	0
	Total hours per week	3