课程大纲
COURSE SYLLABUS

1.	**课程代码/名称** **Course Code/Title**	**MSE5016 胶体与界面系统 Colloidal & Interfacial Systems**
2.	**课程性质** **Compulsory/Elective**	专业选修课
3.	**课程学分/学时** **Course Credit/Hours**	3/48
4.	**授课语言** **Teaching Language**	英文/ English
5.	**授课教师** **Instructor(s)**	何振 助理教授
6.	**是否面向本科生开放** **Open to undergraduates or not**	否
7.	**先修要求** **Pre-requisites**	无

8. 教学目标
Course Objectives

This course with cover fundamental principles related to interactions, dynamics, and structure in colloidal and interfacial systems. Concepts covered include Fluid Interfaces and Capillarity, Brownian motion, diffusion, sedimentation, electrophoresis, colloidal and surface forces, polymeric forces, aggregation, deposition, and experimental methods. Modern topics related to colloids in nano- science and technology will be discussed throughout the course with frequent references to recent literature. Students with research topics in colloids, polymers, biomaterials, nanoscience and nanotechnology will be beneficial from the lectures of this course.

9. 教学方法
Teaching Methods

Lectures of this course are chosen carefully with the aim of helping students with research topics in colloids, polymers, biomaterials, and nanomaterials. Both class topics and recent advances will be reviewed. Students will actively participate with literature reviews, computer projects, and topic presentations.

10. 教学内容
Course Contents

Section 1	Introduction
Section 2	Preparation of colloids and nanoparticles
Section 3	Fluid Interfaces and Capillarity
Section 4	Brownian Motion
Section 5	Diffusion
Section 6	Sedimentation
Section 7	Dispersion Forces
Section 8	Electrostatic Forces
Section 9	Polymer Forces
Section 10	Mid-term Presentation
Section 11	Mid-term Presentation

Section 12	Colloidal dispersion system
Section 13	Assembling
Section 14	Surfactant
Section 15	Emulsions and Foams
Section 16	Gel
Section 17	Final exam

11. 课程考核
Course Assessment

Quiz/attendance	20%
Homework	20%
Midterm Presentation	20%
Final Project	40%

12. 教材及其它参考资料
Textbook and Supplementary Readings

Textbook:
An Intrduction to Interfaces & Colloids. John C. Berg, 2009
Colloidal Dispersions. Russel, W.B., Saville, D.A., and Schowalter, W.R., 1989
Reference books:
Principles of Colloid & Surface Chemistry. Hiemenz, P.C., Rajagopalan, R., 3rd ed. 1997.
Foundations of Colloid Science. Hunter, R.J., 2nd ed. 2001.
Intermolecular and Surface Forces. Israelachvili, J.N., 2nd ed. 1992