

## Course Syllabus (2013)

**Course Title:** Stability and Stabilization of Cosmetic Products

**Code:** 153716

**Credits:** 3(3-0)

**Course Description:**

Study on the application of thermodynamics and kinetics to the decomposition and stabilization of active ingredients in various cosmetic formulations. This course will focus on various kinds of degradation kinetics either in normal or accelerated conditions including factors influencing rate of degradation. These variables are useful in establishing a guideline for a more stable cosmetic product.

**Course Objectives:**

1. To understand various types of decompositions in cosmetic products
2. To be able to avoid and prevent instability of cosmetic products
3. To determine self-life of cosmetic products and their active ingredients.

**Course Director** Asst.Prof. Dr. Waree Tiyafoonchai

**Lecturer** Assoc.Prof. Dr. Srisagul Sungthongjeen

Assoc.Prof. Dr. Aurasorn

Asst. Prof. Soravoot Rujivipat

Asst.Prof. Dr. Anothai Tangsumranjit

Dr. Pensri Chareonsit

**Course Evaluation:**

Written exams

Mid-term 50%

Final 50%

**Grading System**

80% and above	A
75-79.99%	B+
70-74.99%	B
65-69.99%	C+
60-64.99%	C
55-59.99%	D+
50-54.99%	D
below 50%	F

**Selected References:**

1. Dispersions: characterization, testing, and measurement. Erik Kissa: edited. Marcel Dekker, 1999.
2. Handbook of cosmetic science and technology. Andre' O. Barel, Marc Paye and Howard I. Maibach: edited. Marcel Dekker, 2001.
3. Handbook of cosmetic microbiology. Donald S. Orth.: edited. Marcel Dekker, 1993.
4. Cosmetic and drugs preservation: principles and practice. Jon J. Kabara: edited. Marcel Dekker, 1984.
5. Emulsion-suspension technology for cosmetic and pharmaceutical products. Norman D. Weiner: workshop proceeding, Faculty of Pharmaceutical Sciences, Naresuan University, 2003.

**I. Class Schedule (Lecture):**

Time: Wednesday 13:00 – 16:00

Venue: Phar 2107

Date	Title	Lecturer
21, 28 /8/2013	Introduction <ul style="list-style-type: none"><li>• Course outline and grading policy</li></ul> Stability problems in cosmetic products Preformulation	Waree T. Soravoot R.
4,11 /9/2013	Chemical decompositions and prevention methods <ul style="list-style-type: none"><li>• Solvolysis</li><li>• Oxidation</li><li>• Photolysis</li><li>• Miscellaneous</li></ul> Stability of protein and peptides	Waree T.
18,25/9/2013	Chemical kinetics <ul style="list-style-type: none"><li>• Basic kinetic principles</li><li>• Role of molecular structure</li><li>• Rate equation and kinetic models<ul style="list-style-type: none"><li>○ Kinetic models to describe chemical degradation in solution &amp; solid state</li><li>○ Calculation of rate constants by fitting to kinetic models</li></ul></li></ul>	Srisagul S.
2/10/2013	Factors effecting chemical decomposition	Srisagul S.
Mid-term exam 7-11/10/2013 (47%)		
16, 30/10/2013	Determination of chemical stability <ul style="list-style-type: none"><li>• Apply Arrhenius equations for stability testing</li><li>• Concepts in experimental design</li><li>• Evaluation of chemical stability in product design</li></ul>	Srisagul S.
*26/10/2013 (Sat. 9-12)	Microbiological considerations <ul style="list-style-type: none"><li>• Microorganism in cosmetic products</li><li>• Preservation of cosmetic products</li></ul>	Invited speaker
*26/10/2013 (Sat. 13-16)	Microbiological tests <ul style="list-style-type: none"><li>• Microbiological test methods</li><li>• Challenge test for the efficacy of preservative</li></ul>	Invited speaker
6/11/2013	Emulsion & microemulsion stability <ul style="list-style-type: none"><li>• Physical instability of emulsion</li><li>• Physical instability of microemulsion</li><li>• Stability testing</li></ul>	Anothai T.
13/11/2013	Suspension stability <ul style="list-style-type: none"><li>• Theory of suspensions</li><li>• Effect of surface charge on properties of suspensions</li><li>• Preventing suspension instability</li></ul>	Aurasorn S.
*22/11/2013 (Fri. 13-16)	Stability problems in cosmetic industrial applications	Invited speaker
27/11/2013 4/12/2013	Guideline for stability study of cosmetic products	Pensri C.
Final exam 9-20/12/2013 (53%)		

เกณฑ์การออกข้อสอบและผู้รับผิดชอบ

ที่	จำนวน ชั่วโมง	หัวข้อการบรรยาย	คะแนน (%)	เวลาที่ใช้ในการสอบ ( นาที)	อาจารย์ผู้ออกข้อสอบ
1	6	Stability problems in cosmetic products Preformulation	12	20	Soravoot R.
2	6	Chemical decompositions and prevention methods Stability of protein and peptides	14	40	Waree T.
3	6	Chemical kinetics	14	40	Srisagul S.
4	3	Factors effecting chemical decomposition	7	20	Srisagul S.
Mid-term exam 7-11/10/2013 (47%)					
5	6	Determination of chemical stability	14	40	Srisagul S.
6	6	Microbiological considerations Microbiological tests	14	20	Invited speaker
7	3	Emulsion & microemulsion stability	6	40	Anothai T.
8	3	Suspension stability	6	20	Aurasorn S.
9	6	Guideline for stability study of cosmetic products	13		Pensri C.
Final exam 9-20/12/2013 (53%)					