COSC 6547: Skin Care Raw Materials and Formulations
School of Natural Sciences
Fairleigh Dickinson University, T-H Campus

General Information:

Semester: Spring 2008
Day/Time: Tuesdays Evenings 5.25- 8.00
Room: 1143 DH
Instructor: Mihaela Gorcea, Adjunct Faculty, Fairleigh Dickinson University
Contact: Work Phone: 973- 628 3286; Cell Phone:  201 - 658 6102; mgorcea@ispcorp.com
Text References: Instructor Handouts.
Recommended text: Not required.
Optional Text:
Beginning Cosmetic Chemistry, 2\textsuperscript{nd} edition, Randy Schueller and Perry Romanowski, Allured, 2003

Course Description:
The course will begin with an introduction to skin, its physiology, primary function and major constituents. Following the introduction the course will consider the fundamental characteristics, performance, ingredients and technologies used in cosmetic formulations such as: emulsifiers, rheology modifiers and thickeners, moisturizers, humectants, emollients, preservatives, vitamins, antioxidants, AHA and BHA, skin protectants, skin lighteners, sunscreens. Topics covered in the course will also include emulsion technology, types of emulsions, stabilization of emulsions and preparation methods for emulsions. Fundamental categories of skin care and OTC products currently on the market will also be discussed; these will include body & facial moisturizers, anti-aging technologies, anti-acne products, skin lighteners, skin protectants, sunscreens, self-tanners, bath and shower products, shaving products, spa products. Each class will also address formulation approaches and functional methods of developing specific cosmetic skin care products.

Objective:
Upon successful completion of this course, students will be familiar with the basic types of skin care raw materials used in the cosmetic industry, emulsion technologies, categories of cosmetic and OTC skin care products as well as understand how to formulate cosmetic skin care products.

Format:
- Lecture and interactive discussion
- Mandatory attendance
  You are expected to attend every lecture. Attendance will be taken and will contribute toward your grade. There will be NO MAKEUP EXAMS FOR MISSED EXAMS. Consideration will be given only in the case of a documented and unavoidable company travel, business obligations, or medical emergency.
- Exams
  - There will be a midterm exam as well as a cumulative final exam given during final week.

Grading Policy:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Midterm Exam</td>
<td>40%</td>
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<tr>
<td>Final Exam (cumulative)</td>
<td>50%</td>
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<tr>
<td>Quizes &amp; Oral presentation</td>
<td>10%</td>
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</table>
# COSC 6547: Skin Care Raw Materials and Formulations
## Course Outline

<table>
<thead>
<tr>
<th>Week Nr.</th>
<th>Lecture/Date</th>
<th>Expected Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Lecture 1, January 29</td>
<td>Introduction to Skin Care; Overview of skin physiology, structure and function; Types of skin; Basic US regulations for marketing of skin care cosmetic products; Categories of skin care products; Product Development Process; Description and classification of main cosmetic vehicles.</td>
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<tr>
<td>2</td>
<td>Lecture 2, February 5</td>
<td>Emulsion technologies; surfactant classification; Types of surfactants and examples; Types of emulsions; In class exercises</td>
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<tr>
<td>3</td>
<td>Lecture 3, February 12</td>
<td>Emulsion technologies; types of emulsions; typical emulsion formula composition; manufacturing cosmetic emulsions; Emulsion stabilization; Formulation guidelines and examples. <strong>Quiz 1 from lecture 1 &amp; 2</strong></td>
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<tr>
<td>4</td>
<td>Lecture 4, February 19</td>
<td>Dry skin and skin moisturization; Moisturizer ingredients classification; Moisturizer formulations examples; In Class exercises</td>
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<tr>
<td>5</td>
<td>Lecture 5, February 26</td>
<td>Rheology general consideration; Rheological additives; Formulations guidelines and examples. <strong>Quiz 2 from lecture 3 &amp; 4</strong></td>
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<tr>
<td>6</td>
<td>Lecture 6, March 4</td>
<td>Preservatives definition; types of microorganisms; factors influencing preservatives efficacy; preservatives examples. Midterm review</td>
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<td>7</td>
<td>No Lecture, March 11</td>
<td>Midterm examination</td>
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<td>8</td>
<td>Spring Break, May 18</td>
<td>Spring break</td>
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<tr>
<td>9</td>
<td>Lecture 7, March 25</td>
<td>Oily skin and anti-acne ingredients; Sensitive skin; Skin protectant ingredients and examples</td>
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<td>10</td>
<td>Lecture 8, April 1</td>
<td>Skin aging and anti-aging technologies; Formulation strategies and examples</td>
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<tr>
<td>11</td>
<td>Lecture 9, April 8</td>
<td>Sunscreens; Definition; UV filters classification; Formulations strategies and examples. <strong>Quiz 3 from lectures 7 &amp; 8</strong></td>
</tr>
<tr>
<td>12</td>
<td>Lecture 10, April 15</td>
<td>Antioxidants in cosmetics -guest lecturer</td>
</tr>
<tr>
<td>13</td>
<td>Lecture 11, April 22</td>
<td>Miscellaneous skin care products: Self-tanners; Skin Lighteners; Spa products; Formulation examples. In-class exercises</td>
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<tr>
<td>14</td>
<td>Lecture 12, April 29</td>
<td>Miscellaneous skin care products: Skin Cleansing products; Toners and astringents; Formulation examples. In-class exercises</td>
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<tr>
<td>15</td>
<td>Lecture 13, May 6</td>
<td>Oral presentations; Final Exam review</td>
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<tr>
<td>16</td>
<td>Final Exam, May 13</td>
<td>Final Examination -cumulative</td>
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Lecture schedule and topic is subject to change with Instructor notification
Guest lectures may provide information on relevant topics with Instructor notification

Oral Presentation Requirements

Oral presentation - Due May 8, 2008 (Topic Due no later than April 8th)

Each student has to prepare an oral presentation (hard-copy included) due to me on May 8, 2008. The presentation has to be **10 minutes in length** and in **PowerPoint format**.

**Topic**
Select one of your preferred ingredients that is used in the skincare industry (e.g. a moisturizer, an emulsifier, a thickening agent, an anti aging agent, sunscreen, skin lightener, or any other ingredient) and prepare a presentation (in PowerPoint) covering the selected topic.

Points to be covered/ included in presentation:
- Title of the presentation
- Introduction with outline
- INCI name of the ingredient
- Chemical classification
- Molecular weight
- Chemical structure
- Physical chemical properties
- Specifications: purity, solids, pH (if applicable)
- Role in skincare applications
- Scientifically justify the reason(s) of selecting your ingredient

With your preferred ingredient develop a formulation including:
- Product name
- Product type (gel, emulsion)
- Weight percentages
- Phase sequencing
- Ingredients trade name and INCI names with suppliers (if available)
- Functions of all other ingredients used in your formula
- Manufacturing procedure
- Ingredient list
- Estimate product's appearance and rheology
- Targeted skin type
- Product testing

Conclusions of the presentation

**Please Note:**
- **Academic Integrity:**
  Cheating, in any form, will not be tolerated. Students caught cheating will receive a zero for that particular assignment. Details regarding FDU’s new Academic Integrity policy are readily available on-line at [http://fduinfo.com/studentlife/handbook/](http://fduinfo.com/studentlife/handbook/)

- **Cell Phones:**
  Cell phones should be turned off during lecture and exam periods.