FATS AND OILS APPLIED TECHNOLOGY FALL 2021 SYLLABUS
FOS 6936 (14398) / FOS 4936 (14345)
Dual Level Course (Graduate & Undergraduate)
3 units credit (2 units lectures; 1 unit Laboratory)

Lectures: Location (Wrinker Hall), Wednesdays at 10:40-12:35 AM
Laboratory: FSHN Bldg. Process Lab, Fridays at 10:40 - 12:35 AM

Instructor: Dr. Gloria Cagampang
Office: Rm 240 FSHN
Phone: 352-256-2616
e-mail: cagampang@ufl.edu

Office Hours:: Wednesdays, Thursdays & Fridays at 7:30AM - 3:30 PM).

Course Description:

The course is designed for PhD, Masters, and graduating candidates in the Department of Food Science and Human Nutrition and it involves lectures and 15 hours of laboratory. The lectures deal on the basic science of the three leading vegetable fats and oils (soybean, canola, palm olein, and palm oils) with emphasis on their physicochemical and biochemical properties and their relevance on the processing, application and utilization in foods. The laboratory will involve elucidation of the knowledge gained in the lectures by actual processing of a specific food utilizing the functional fats developed by the class. Attendance to all the lectures and specified laboratory schedules are mandatory and will be part of the final grade for the course. Consistent attendance in the lectures and laboratory schedules carries major influence in the learning process with satisfactory grades.

Prerequisites: Undergraduate courses in chemistry and organic chemistry.

COVID PLAN
All the lectures will be conducted by face to face system and the students will be provided with the details of the lecture materials and the detailes of the procedures of the laboratory exercises thru CANVAS. The schedules of the lectures and laboratory exercises will be strictly adhered as per attached CALENDAR to ensure the completion of the learnings as specified in the Syllabus. Students will not be required to come to UF except during their assigned laboratory schedules to

accomplish the exercise tasks in the Pilot Plant on the specified Fridays scheduled for the group (The class will be divided into groups of 4 students only). Prior to the entry in the Pilot Plant the students will present the UF Health result of their COVID-19 test and their temperature reading will be taken at this point. The students will wear a laboratory gown, and gloves at all times in the pilot plant. Distancing will be strictly enforced). Washing hands with soap and water and sanitizing solution will be strictly enforced. In the event that the student does not pass the requirements, the case will be referred to the UF Administration for the implementation of the UF policies that includes the following categories:

1. **Missed class attendance**
2. **Missed Exams**
3. **Accomodations for the students encountering disabilities and other learning barriers**

Objectives of the course:

1. To provide the general knowledge on the agronomy, production, and trade of the current domestic and offshore oilseeds (soybean, palm oleins, and palm oil).
2. To provide the basic science of the critical parameters involved in the extraction, refining, bleaching, deodorization of fats and oils and their modifications (blending, interesterification, emulsification, votation, fractionation and genetic manipulation) into functional shortenings for food. and the subsequent handling and the preservation of their quality.
3. To provide the basic chemistry of fats and oils with focus in the understanding of the relevance of their physicochemical and biochemical properties in their functions as ingredients in foods.
4. To provide knowledge and understanding of the changes and reactions of fats and oils in the food system influencing their stability in the finished food.
5. To provide the fundamentals of the metrics for assessing the quality of fats and oils that are relevant to the safety of their usage as ingredient in the food system.
6. To provide the updated knowledge on the nutritional and health benefits of fats and oils focusing on the myths and realities of the ingredients.
7. To provide hands on experience in the differentiation of the functionality of fats and oils as applied in the food system.

Format: Lectures will involve discussions on relevant issues and further clarifications on the topics. Laboratory exercises will provide actual

evaluation of the properties of the specific fats blended in the laboratory and their performance on the quality attributes of the processed food. All lecture materials are posted in Canvas.

Exams: Three written exams involving the application of the knowledge gained in the discussions during lectures and laboratory meetings. The schedule of the exams are specified in the CANVAS information.

Grading: **Percent of Grade**

Written examinations (3) ---------- 75
Attendance and participation ----------10
Laboratory Testing, and Report 15
The current grading system of the University of Florida that includes the use of minus grades will be followed.

Other Reference Materials: (Main Information Posted in CANVAS)

1. Erham, S.Z. 2005. Industrial uses of vegetable oils. AOCS Press, Champaign, Illinois. ISBN 1-893-997-84-7.
2. Firestone, D. 2006. Physical and chemical characteristics of oils, fats, and waxes. 2nd Ed. AOCS Press. ISBN 978-1-893997-99-8.
3. Frankel, E.N. 2007. Antioxidant in food and biology. The Oily Press, England. ISBN 978-0-9552512-0-7.
4. Gunstone, F.G. 2004. Rapeseed and Canola Oil. CRC Press. ISBN 0-8493-2364-9.
5. Gupta, M. K. 2008. Practical guide to vegetable oil processing. AOCS Press, Urbana, Illinois. ISBN978-1-893997-90-5
6. Hui, Y.H. 1996. Bailey's Industrial oil and fat products. 5th Ed. Volume 4. John Wiley & Sons, Inc. ISBN 0-471-59428-8.
7. Johnson, L.A. 2008. Soybeans: Chemistry, Production, Processing & Utilization. AOCS Press, ISBN 978-1-893997.
8. List, G. 2009. Bleaching and Purifying Fats and Oils Theory and Practice. AOCS Press. ISBN 978-1-893997-91-2.
9. List, G and King, J. 2010. New Hydrogenation of Fats and Oils, Theory and Practice. AOCS Press. !SBN 978-1-893-997-93-6.
10. Liu, K. 1997. Soybeans : Chemistry, Technology, and Utilization. Chapman and Hall
11. Moreau, A.R. and Kamal-Eldin, A. 2009. Gourmet and Health-Promoting Specialty Oils. AOCS Press. ISBN 978-1-83997.10.

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