

Grain Technology in Food Science, Spring 2019 SYLLABUS
Dual Level Course - FOS 6936 (1629) / FOS 4936 (05BA)
3 units credit

Lectures: Location Thursdays at (MCCB 1108), Period 2-3 (8:30-10:25 AM) and Fridays at (MCCB 1108), Period 2 (8:30-9:20 AM).

Instructor: Dr. Gloria Cagampang
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Office Hours: (7:30 AM to 3:30 PM Wednesdays to Fridays)

Course Description:

The course is designed for PhD, Master, and graduating candidates in the Department of Food Science and Human Nutrition and it involved 3-credit hours of lectures. The lectures deal on the basic science of the 5 leading cereal grains (rice, corn, wheat, sorghum, and barley with emphasis on their physical, chemical, and biochemical properties and their relevance on the processing, application and utilization of the cereal grains in foods.

Prerequisites: Undergraduate courses in general and biochemistry.

Objectives:

1. To provide the general knowledge on the agronomy, production and trade of the above cereal grains in the domestic and global markets.
2. To provide the basics of the critical parameters involved in the utilization and subsequent handling involved in the preservation of their quality.
3. To provide the basic chemistry of cereal grains 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 the cereal grains in the food system influencing the quality and shelf-life of the finished food.
5. To provide the fundamentals of the metrics for assessing the quality of cereal grains 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 the constituents of the grains focusing on the myths and realities as ingredients in foods.

Format: Lectures will involve discussions on relevant issues and further clarifications on the topics. Term papers on the cereal grains not discussed in the lectures will be encouraged for additional credits if time allows.

Exams: Three written exams involving the applications of the knowledge gained in the lectures and discussions. **The schedule of the exams will be provided and posted in the Schedule of Lectures.**

Grading:

Percent of Grade

Written examinations (3) ----- 90

Participation and attendance ----- 10

The current grading system of the University of Florida that includes the use of minus grades will be followed.

All Lecture Materials: Posted in the Canvas

Additional reading references

- Chemistry and Technology of Cereal Grains 2015
- Principles of Cereal Science and Technology, Third Edition 2010
- Current articles in the Cereal Chemistry Publications 2016-2017
- World Wheat, Corn, and Rice. June 10, 2015.

Course Content:

1. Part I – Structural Components of Cereal Grains.
2. Physical properties of cereal grains.
3. Evolution of Business Initiatives: supply chain and trade challenges in the domestic and global markets.
4. Processing of cereal grains.
 - a. Harvesting and treatment
 - b. Grading
 - c. Milling and milling parts separation
 - e. Storage and handling
5. Genetic modifications of cereal grains: Improvement of Nutritional Values
6. Chemistry and stability of cereal products
7. Heart Healthy Grains : Information on health benefits

All Lecture Materials: Posted in the Canvas

Schedule of Examinations:

Examination #1- Date will be posted

Examination #2- Date will be posted

Examination #3 -Date will be posted

Lecture Schedules: List will be posted in Canvas

Protocol during classes:

1. Turn off cell phones
2. Raise hands for discussions, clarifications, & questions: The course is meant to be interactive. One conversation at a time.
3. Enough time will be provided for note taking.