

Instructors: This course is taught by Drs. Liwei Gu (course coordinator), Susan S. Percival, and Wendy J. Dahl. Part of lectures will be given by Lindsey Christman as supervised teaching.

Phone: (352) 294-3730 (Liwei Gu)

Email: LGU@ufl.edu (Liwei Gu)

Time: Period 4 (10:40-11:30 pm), Monday, Wednesday, Friday

Classroom: Food and Environmental Toxicology Lab Room 3
Weimer Hall 1092

Office hours: 9:20-10:20 am Wednesday. Dr. Gu has an open-door policy outside of office hours; please drop by any time

Course Description and Objectives

This course focuses on analyses, chemistry, processing, bioavailability, and health benefits of bioactive food components. Content will include both basic knowledge and the latest research trends. All readings materials will be provided or can be obtained from e-book or e-journals from UF library. The specific objectives of this course are:

1. To understand fundamental concepts and knowledge related to functional foods
2. To critically read, analyze, and discuss scientific literature
3. To examine and assess the latest developments in nutraceutical research
4. To apply the learned knowledge and develop functional foods for real world applications

Course content and format:

There is no required textbook for this course. Reading materials are from peer-reviewed journals or e-books from UF library.

| Chapter | Content | Instructor |
|---------|---|------------|
| 1 | Introduction | Gu |
| 2 | U.S. regulations on dietary supplements, nutraceuticals, and functional foods | Gu |
| 3 | Market and international issues | Gu |
| 4 | Antioxidants and oxidative stress | Gu |
| 5 | Health benefits, cellular and molecular mechanisms (Feb 6, 8, 10) | Percival |
| 6 | Absorption, disposition, metabolism, and elimination of nutraceuticals | Gu |
| 7 | Phytochemical-based nutraceuticals | Gu |
| 8 | Prebiotics, probiotics, and gut microbiome (March 6, 8, 10) | Dahl |
| 9 | Nutraceutical extraction and concentration | Gu |
| 10 | Nutraceutical analysis | Gu |
| 11 | Functional food and metabolic syndrome | Gu |
| 12 | Inflammation and Anti-inflammatory nutraceuticals | Gu |
| 13 | Nanotechnology and functional foods | Gu |
| 14 | Lipid-based nutraceuticals and Nutraceuticals of other sources | Gu |

Spring break is March 13-17, 2023.

Course Grading (300 total points)

- Quiz in class (4-5 for 20 points)
- Assignments
 - Question and short answer assignment (2 for 20 points)
 - Critical reading and summary of assigned papers (8 for 80 points)
- Group project – develop a functional food product and marketing plan (50 points)
- Term paper and presentation – 4-6 page short review paper (80 point)

- Final exam (open book, 50 points)

Course will be graded according to the latest UF grade policy

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

| Letter grade | Grade point | Percent value |
|--------------|-------------|---------------|
| A | 4.0 | 94-100% |
| A- | 3.67 | 90-93.9% |
| B+ | 3.33 | 87-89.9% |
| B | 3.0 | 84-86.9% |
| B- | 2.67 | 80-83.9% |
| C+ | 2.33 | 77-79.9% |
| C | 2.0 | 74-79.9% |
| C- | 1.67 | 70-73.9% |
| D+ | 1.33 | 67-69.9% |
| D | 1.0 | 64-66.9% |
| D- | 0.67 | 60-63.9% |
| E (Fail) | 0 | 0-59.9% |

Homework and term paper turned in late will be penalized with 10% of the maximum grade per week of delay. Similarly, a credit of 10% of the maximum grade will be given per week if homework and reports are not graded by the instructor within a week.

Attendance

Students must attend all lectures and discussion according to university policy

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>. The non-justified absences and absences in excess of three will be penalized each with 5% off the maximum final grade. Special circumstances need to be addressed with the instructor and will be assessed on a case-by-case basis.

Critical reading and summaries of assigned papers (80 pts total)

After critical reading an assigned paper, write a summary using the following headlines:

1. *Research Objectives*: list objectives and purposes of the assigned research paper
2. *Research Findings*: summarize and interpret major findings of assigned paper
3. *Limitations and Drawbacks*: summarized any limitations and drawbacks in experimental design, research methods, interpretation of results, and other aspects of the work
4. *Creative Thinking and Novel Ideas*: for example, you may relate the results of this paper to a subject not included in the paper or translate research to new applications or your own research
5. *Answers to other questions*: Some assigned papers come with specific questions. Answer those questions in this section. You can omit this section if there is no specific question.
6. *References*: Cite the assigned paper and other papers (if necessary) to support your arguments.

Your summary doesn't need to very lengthy if all the required elements are covered.

Product Development Group Project (50 points total)

A group of 3-4 students will develop a brand-new functional food product for the market place. A guideline will be provided to help you through the development process.

1. Groups will create a marketing plan with the goal of developing and selling a product that would have real world applicability. This should be a product that you could realistically commercialize in order to help a specific demographic.
2. In your report, your group’s product should include; a product name, basic composition, functions, label according to FDA regulation, targeted consumers, price range, production method, marketing strategies, etc.
3. Groups will utilize scientific literature along with classroom material to creatively develop a marketing plan to fit the needs of an assigned demographic.
4. Students will also present their new food product and marketing plan to the class in a brief **15 minute** presentation.
5. This will be a Persuasive Presentation as if you were a R&D Scientist presenting to the management and marketing. Business Casual Attire is **REQUIRED**. This is your opportunity to be creative and convince your peers why your product will be successful in the market place.
6. Students will be graded on the following criteria:

| Items | Point Total |
|---|-------------|
| Completed Marketing Plan | 10 Pts |
| Application of Literature and Materials | 10 Pts |
| Real World Applicability/Scientific Merit | 15 Pts |
| Presentation | 10 Pts |
| Creativity | 5 Pts |
| Total | 50 pts |

7. Timeline

| Date | Activities |
|-------|--|
| 2/22 | R&D Lectures and handout Assignment |
| 04/03 | Oral presentations and Marketing Plans Due |

Term paper and presentation (80 points)

1. Format: 4-6 page short review paper, 12 pt Calibri, single space, not including reference
A descriptive title (3 points)
Abstract (250 words, 5 points)
Introduction (half a page, 5 points)
Previous research older than 5 years (2-5 references, 1-1.5 page, 10 points)
Recent research in the last 5 years (10-20 references, 2-4 pages, 20 points)
Future Trends (0.5-1.0, 7 points)
References-choose your own reference style and be consistent throughout the paper
 (You may use a different format for your review topic. For example, you may summarize previous research in the categories of “clinical and human intervention studies”, “animal models”, and “*in vitro* studies” etc.)
2. Paper oral presentation (20 min): Oral presentations must be done in MS PowerPoint. They need to contain all the aspects of the written paper.
Verbal clarity and fluency (10 points)
Clarity of slides (5 points)
Ability to convey complex concepts (10 points)
Timing and Enthusiasm (5 points)

3. Timeline

| Date | Activities |
|---------------|---|
| 02/28 | Send topic / preliminary title to Dr. Gu for approval |
| 04/15, 18, 20 | Oral presentation of term paper |

Academic Honesty

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: *"We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity."* You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: *"On my honor, I have neither given nor received unauthorized aid in doing this assignment."*

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see:

<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code>.

Class evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>.

Students will be notified when the evaluation period opens and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Services for Students with Disabilities

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

Campus Helping Resources

Students experiencing crises or personal problems that interfere with their general wellbeing are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575
www.counseling.ufl.edu/cwc/
 - Counseling Services
 - Groups and Workshops
 - Outreach and Consultation
 - Self-Help Library
 - Wellness Coaching
- U Matter We Care, www.umatter.ufl.edu/
- Career Resource Center, First Floor JWRU, 392-1601, www.crc.ufl.edu/