

## **Foodomics – What is in the Food We Eat and Use to Treat Patients?**

ALS4932 Section Food

Time: Monday First Period (7:25-8:15AM) Location: FSHN 362, Face to Face Class Meeting

Small Group Meetings with Instructor TBA each week

Data collection, data entry, data auditing, data analysis on your own each week

Spring 2020

### Instructor

Peggy R. Borum, PhD [prb@ufl.edu](mailto:prb@ufl.edu) (352) 562-2861 (personal mobile number)

Office Hours: Thursdays 2:00 – 3:30 PM in 409 FSHN

### Graduate Innovator

Please contact through the Canvas website

Stephanie Annarumma, [s.annarumma@ufl.edu](mailto:s.annarumma@ufl.edu)

Office hours: TBA

### Course Overview

Hippocrates said, “Let food be thy medicine” and for nearly a century, diet has been used to treat seizures. The recent practice of precision medicine has emphasized the need to know the chemical composition of food. This course will include several steps that make the needed composition of food found in Florida available for the treatment of patients with refractory epilepsy. Students will collect composition data from food in Florida markets, prepare databases designed to use that data in recipes consistent with patients’ diet prescriptions, address specific questions concerning Precision Ketogenic Therapy, and draft potential research projects to be conducted in the future.

### Reasons for the Course Activities

Research is exciting. Learning something that no one has ever known can be the highest of all highs. Basic research questions are very stimulating and extremely important. Translational science research questions can be very satisfying when you realize you have helped someone who had no answer. This type of research also brings a great deal of responsibility because someone with no answer is depending on you. When in this position it is important to remember that you should do unto others as you would have them do unto you. When you realize that the person with no answer could be you, the repetitive tasks that require great attention to detail cannot become boring or something that one just tries to get done as quickly as possible.

For our spring 2020 class, the people with no answers are those who have a diagnosis of epilepsy and no treatment has helped but has brought adverse side effects. The therapy that we are studying is Precision Ketogenic Therapy (PKT) that alters the diet to reduce carbohydrate intake to very low concentrations and fills in the calories that have been removed with fat calories. Since this is a therapy, it is important that we know exactly what and how much we are administering. Food has not routinely been used in such a way and as a result the composition of food has not received as much chemical composition analyses as we would like to have.

We take advantage of the fact that the United States labeling laws require many foods to be analyzed for a fairly short list of ingredients. However, there is not a database available to us that gives us these data

to use in treatment of patients. We term these needed data “foodomics” because the goal is to know the identity and amount of each chemical in the food. Our laboratory has been gathering information about values from Nutrition Facts Labels for several years and have found that the composition of foods changes more rapidly than we expected. If we want to utilize nutrients to help control seizures, it is important that we know the chemical identity and the quantity of all the nutrients in the food the patient is consuming now. If we only have these data from a few years ago or months ago and the composition of the food has changed, we think we are administering a therapy at a certain dose when in reality we do not know what dose we are administering. Thus, a frequently updated Foodomics Database is essential in trying to help these patients who have no answer.

### Course Research Objectives and Activities

In this course, you will collect data on specific brands of food in food stores and enter the data into our Foodomics Database used to treat patients. You will be among the pioneers of foodomics enabling its use in patient care. You will create a current Foodomics Database that can be used in implementing the diet prescription of current patients by creating recipes that are palatable and personalized to the food preferences of the patient. As a group, the class will prepare an abstract and present the poster at the Undergraduate Research Symposium. You will prepare and present a Potential PKT Foodomics Research Project with the option of continuing to work on it in the following semesters.

### Course Education Objectives and Outcomes

**Content:** Students will demonstrate competence in the concepts of use of nutrients to treat and prevent disease. These will include understanding of Precision Ketogenic Therapy, advantages and limitations of current nutrient databases, and translational science in theory as well as practice.

**Research Skills and Critical Thinking:** Students will hone skills of data collection, data wrangling, database creation, database utilization to meet specific patient needs, and creation of potential research projects using the data collected.

**Collaborative and Teamwork Skills:** Students will learn and use Microsoft Teams software to collaborate with their colleagues and organize data. Since Microsoft Teams software has been adopted by many Fortune 500 companies and educational organizations including the University of Florida, competency in its use will be desirable when applying for future internships, education opportunities, and professional positions. The class will work collaboratively as a single team of 14 members, 7 teams of partners of 2, and 14 individual researchers.

**Communication with Peers and Scientific Community:** Students will present their research progress to each other, to the instructor, and to the research community in both written and oral formats.

### Course Responsibilities

#### Individual Responsibilities

- Individual work reports in OneNote
- Data collection and data entry into the Foodomics Database of your Research Partner Team
- Wrangling of your research partner’s data entered into the Foodomics Database of your Research Partner Team
- Creation and presentation of a Potential PKT Foodomics Research Project

#### Research Partner Team Responsibilities

- Collaborative plan and execution of that plan to have data collected, entered, and wrangled on time.
- Collaborative creation and posting of report of your research team’s research progress.
- Review of your research partner’s Potential PKT Foodomics Research Project

## Entire Class Responsibilities

- Contribute to the creation and review of the Undergraduate Research Symposium abstract, poster and recipes illustrating application of database

## TimeLine

- Data Collection and Creation of Foodomics Database- Weeks 1-6
- Undergraduate Research Symposium Abstract, Poster Presentation – Weeks 7-12
- Creation of Potential PKT Research Project with the option of implementing the research in a following semester - Weeks 10-15

## Recommended Materials

Recommended material will be posted to the Foodomics Class Spring 2020 site.

## Evaluation of Grades

Assignment	Total Points	Percent of Grade
Data Collection	500	50%
Preparation of database	200	20%
Abstract, Poster, and Presentation	100	10%
Individual Project Proposal	200	20%
TOTAL	1000	100%

## Grading Scale

Score	Percent	Grade	Grade Points
934-1000	93.4-100	A	4.00
900-933	90.0-93.3	A-	3.67
867-899	86.7-89.9	B+	3.33
834-866	83.4-86.6	B	3.00
800-833	80.0-83.3	B-	2.67
767-799	76.7-79.9	C+	2.33
734-766	73.4-76.6	C	2.00
700-733	70.0-73.3	C-	1.67
667-699	66.7-69.9	D+	1.33
634-666	63.4-66.6	D	1.00
600-633	60.0-63.3	D-	0.67
0-599	0-59.9	E	0.00

More information on grades and grading policies is here:

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

## Class Attendance and Make-Up Policy

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent

with university policies that can be found at: [catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/](https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/).

## Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

## Course 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 [gatorevals.aa.ufl.edu/students/](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 [ufl.bluera.com/ufl/](https://ufl.bluera.com/ufl/). Summaries of course evaluation results are available to students at [gatorevals.aa.ufl.edu/public-results/](https://gatorevals.aa.ufl.edu/public-results/).

## Class Demeanor

Students are expected to arrive to class on time and behave in a manner that is respectful to the instructor and to fellow students. Please avoid the use of cell phones. Opinions held by other students should be respected in discussion, and conversations that do not contribute to the discussion should be held at minimum, if at all.

## Materials and Supplies Fees

There are no additional fees for this course.

## University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students 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.” The Honor Code (<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

## Counseling and Wellness Center

Contact information for the Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc/Default.aspx>, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

## Course Schedule

Week	Date and Time	Activity
Week 1	<b>Monday, 01/06/2020</b> 7:25 AM FSHN Room 362	<b><u>Class 1:</u></b> <ul style="list-style-type: none"> <li>• Introduction to Microsoft Teams</li> <li>• Precision Medicine</li> <li>• Precision Ketogenic Therapy</li> <li>• Nutrient Composition of Food</li> <li>• Foodomics</li> </ul>
	<b>Monday, 01/06/2020</b> 3:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>
	<b>Wednesday, 01/08/2020</b> 7:25 AM FSHN Room 362	<b><u>Class 2:</u></b> <ul style="list-style-type: none"> <li>• Procedures for data collection</li> <li>• Procedures for data entry into Foodomics Database</li> <li>• Receipt of first Data Collection List (DCL) by each individual student.</li> </ul>
		Work outside of class: Data collection and data entry for first DCL.
	<b>Friday, 01/10/2020</b> 2:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>
Week 2	<b>Monday, 01/13/2020</b> 7:25 AM FSHN Room 362	<b><u>Class 3:</u></b> <ul style="list-style-type: none"> <li>• Review of results of first DCL and receipt of second DCL.</li> <li>• Discussion of Research Progress</li> </ul>
	<b>Monday, 01/13/2020</b> 3:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>
		Work outside of class: Data collection and data entry for second DCL.
	<b>Friday, 01/17/2020</b> 2:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>
Week 3	<b>01/20/2020</b>	<b>Martin Luther King Day Holiday</b>
	<b>Friday, 01/24/2020</b> 2:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>
Week 4	<b>Monday, 02/03/2020</b> 7:25 AM FSHN Room 362	<b><u>Class 4:</u></b> <ul style="list-style-type: none"> <li>• Review of results of second DCL and receipt of third DCL.</li> <li>• Discussion of Research Progress</li> </ul>
	<b>Monday, 02/03/2020</b> 3:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>
		Work outside of class: Data collection and data entry for third DCL.
	<b>Friday, 02/07/2020</b> 2:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>

Week 5	<b>Monday, 02/10/2020</b> 7:25 AM FSHN Room 362	<b>Class 5:</b> <ul style="list-style-type: none"> <li>Review of results of third DCL and receipt of fourth DCL.</li> <li>Discussion of Research Progress</li> </ul>
	<b>Monday, 02/10/2020</b> 3:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>
		Work outside of class: Data collection and data entry for fourth DCL.
	<b>Friday, 02/14/2020</b> 2:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>
Week 6	<b>Monday, 02/17/2020</b> 7:25 AM FSHN Room 362	<b>Class 6:</b> <ul style="list-style-type: none"> <li>Review of results of fourth DCL and receipt of fifth DCL.</li> <li>Discussion of Research Progress</li> <li><b>Discuss Abstract for Undergraduate Research Symposium</b></li> </ul>
	<b>Monday, 02/17/2020</b> 3:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>
		Work outside of class: Wrangling of data from third DCL and fourth DCL of research partner with report posted in teams
	<b>Friday, 02/21/2020</b> 2:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>
Week 7	<b>Monday, 02/24/2020</b> 7:25 AM FSHN Room 362	<b>Class 7:</b> <ul style="list-style-type: none"> <li><b>Finalize Abstract for Undergraduate Research Symposium</b></li> <li>Discussion of Research Progress</li> </ul>
	<b>Monday, 02/24/2020</b> 3:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>
		Work outside of class: Data collection and data entry for fifth DCL.
	<b>Friday, 02/25/2020</b> 2:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>
Week 8	<b>03/2-6/2020</b>	<b>Have a Fun and Safe Spring Break!!!</b>
Week 9	<b>Monday, 03/09/2020</b> 7:25 AM FSHN Room 362	<b>Class 8:</b> <ul style="list-style-type: none"> <li>Review of results of DCL5.</li> <li><b>Discussion of Poster for Undergraduate Research Symposium</b></li> </ul>
	<b>Monday, 03/09/2020</b> 3:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>
		Work outside of class: Wrangling of data from fifth DCL of research partner with final data report posted in teams
	<b>Friday, 03/13/2020</b> 2:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>

Week 10	<b>Monday, 03/16/2020</b> 7:25 AM FSHN Room 362	<b>Class 9:</b> <ul style="list-style-type: none"> <li>• Design Poster for Undergraduate Research Symposium</li> <li>• Discussion of Potential Precision Ketogenic Therapy Foodomics research projects of each individual student and the target group for the project</li> <li>• Discussion of Research Progress</li> </ul>
	<b>Monday, 03/16/2020</b> 3:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>
		Work Outside of Class: Review Potential Precision Ketogenic Therapy Foodomics research projects and decide which one(s) to discuss with instructor for potential selection
	<b>Friday, 03/20/2020</b> 2:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>
Week 11	<b>Monday, 03/23/2020</b> 7:25 AM FSHN Room 362	<b>Class 10:</b> <ul style="list-style-type: none"> <li>• Finalize Poster for Undergraduate Research Symposium</li> <li>• Discuss role of Foodomics database in administration of diet prescription patients</li> <li>• Discussion of Research Progress</li> </ul>
	<b>Monday, 03/23/2020</b> 3:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>
		Work Outside of Class: <ul style="list-style-type: none"> <li>• Practice Poster Presentation for Undergraduate Research Symposium to the mirror, friends, or anyone who will listen</li> <li>• Discuss your chosen Potential Precision Ketogenic Therapy Foodomics research projects with instructor</li> </ul>
	<b>Friday, 03/27/2020</b> 2:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>
Week 12	<b>Monday, 03/30/2020</b> 7:25 AM FSHN Room 362	<b>Class 11:</b> Practice Poster Presentation for Undergraduate Research Symposium
	<b>Monday, 03/30/2020</b> 3:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>
	<b>Thursday, 04/02/2020</b>	<b>Undergraduate Research Symposium</b>
	<b>Friday, 04/03/2020</b> 2:00 PM FSHN Room 362	Small groups meetings with instructor as needed– <u>May be a virtual Teams Meeting at mutually convenient time.</u>
Week 13	<b>Monday, 04/06/2020</b> 7:25 AM FSHN Room 362	<b>Class 12:</b> Discuss goals, objectives, and research plan of your Potential PKT Foodomics Research Project
	<b>Monday, 04/06/2020</b> 3:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>
		Work Outside of Class: Finalize goals, objectives, and research plan

		<b>your Potential PKT Foodomics Research Project</b>
	<b>Friday, 04/10/2020</b> 2:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>
Week 14	<b>Monday, 04/13/2020</b> 7:25 AM FSHN Room 362	<b>Class 13:</b> <b>Part 1 of Five-minute Potential PKT Foodomics Research Project Presentation</b>
	<b>Monday, 04/13/2020</b> 3:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>
		Work Outside of Class: Finalize decision if your PKT Foodomics Research Project is something you want to actually begin during Summer 2020 or Fall 2020 and if so, opt in by completing Borum Lab Research Assistant application form and email to the instructor.
	<b>Friday, 04/17/2020</b> 2:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>
Week 15	<b>Monday, 04/20/2020</b> 7:25 AM FSHN Room 362	<b>Class 14:</b> <ul style="list-style-type: none"> <li><b>Part 2 of Five-minute Potential PKT Foodomics Research Project Presentation</b></li> </ul>
	<b>Monday, 04/20/2020</b> 3:00 PM FSHN Room 362	Small groups meetings with instructor as needed – <u>May be a virtual Teams Meeting at mutually convenient time.</u>