



UNIVERSITY of HAWAII®  
**WINDWARD**  
COMMUNITY COLLEGE

## **BIOLOGY 106 ONO Cooking and FOOD Science**

3 Credits (CRN)

WWW and Virtual Course

DB

**INSTRUCTOR:** Teena Michael (TM) PhD

**TEAM!:**

- Ryan Olivares (co-instructor and Olomana partner/farm)
- Jacqueline Noa-Cameron (counselor)
- Kealoha Domingo (chef)
- Jacqueline Noa-Cameron (counselor and coordinator)
- Celeste Andres (Kupa 'Aina partner/farm) <https://pidf.org/kupaaina/>
- Billy Richards (Kupa 'Aina partner/farm)
- Dan Swift (culinary expert WCC and provider of our kitchen)

**OFFICE (TM):** Hale Palanakila 142 Windward Community College

**OFFICE HOURS** Contact me for in-person meeting via email (response within 24 hrs)

**Zoom contact for office hours and discussion times to be determined**

Teena Michael is inviting you to a scheduled Zoom meeting:

- Topic: ONO Cooking and FOOD Science
- Time: This is a recurring meeting Meet anytime
- <https://Hawaii'i.zoom.us/j/93584835038>
- Meeting ID: 935 8483 5038
- Passcode: FOOD

**TELEPHONE (TM).** 808) 236-9114 **EMAIL (best contact):** [teena@hawaii.edu](mailto:teena@hawaii.edu)

**EFFECTIVE DATE:** Spring 2023

### **WINDWARD COMMUNITY COLLEGE MISSION STATEMENT**

*'O keia ka wā kūpono e ho'onui ai ka 'ike me ka ho'omaopopo i kō Hawai'i mau ho'oilina waiwai. Aia nō ho'i ma ke Kulanui Kaiāulu o ke Ko'olau nā papahana hou o nā 'ike 'akeakamai a me nā hana no'eau. Me ke kuleana ko'iko'i e ho'ohiki ke Kulanui e kāko'o a e ho'okumu i ala e hiki kē kōkua i ka ho'onui 'ike a nā kānaka maoli. Na mākou nō e ho'olako, kāko'o a paipai i nā Ko'olau a kō O'ahu a'e me nā hana no'eau ākea, ka ho'ona'auao 'oihana a me ka ho'onui 'ike ma ke kaiāulu — hō'a'ano a e ho'oulu i nā haumāna i ka po'okela.*

*Windward Community College offers innovative programs in the arts and sciences and opportunities to gain knowledge and understanding of Hawai'i and its unique heritage. With a special commitment to support the access and educational needs of Native Hawai'ians, we provide the Ko'olau region of O'ahu and beyond with liberal arts, career and lifelong learning in a supportive and challenging environment — inspiring students to excellence.*

## CATALOG DESCRIPTION

Biol 106 *‘Ono Cooking and Food Science* is an online course designed to integrate the science of food with the chemical, physical, and biological nature of food. It will incorporate Hawaiian resources and sustainability. The overall goal of this course is to enhance students’ understanding of the science of food using the home kitchen to demonstrate the principles of chemistry, biology, and physics of food through videos, online meetings, inquiry-based activities, and a student-designed research project.

### Our Course

This course includes experience with the land—with growing cultural knowledge and growing plants as both a source of our food and our health. We will harvest and prepare food with respect for the land and culture. We will learn skills in growing and cooking. As we nurture the land we nurture culture and ourselves. Each team member listed above is devoted to learning, to education, and to health that reaches beyond our bodies...what might this mean?

We will spend time at Olomana or Kupa aina on the first meetings (Tuesdays) of our course. We will meet at WCC in the kitchen of Dan Swift on our second meetings (Thursdays) where we will focus on the foods chosen by our chef, Keoloha Domingo as we learn about and prepare and enjoy the foods each week.

A theme for our course is KALO. We will understand the \*role Kalo plays within our culture, \*respect for Kalo, \*how to cook/clean Kalo and appreciate the varieties at Olomana and/or that we will use (Maunaloa, Maunaulu, Lenalea, and Moi).

### Recommended Preparation

High school chemistry and algebra but *not* required.

### Requirement course satisfies:

- AT WCC: (<https://catalog.windward.hawaii.edu/biology/biol-106>)
  - [Associate in Arts - Biological Sciences \(DB\)](#)
  - CA Agripharmatech: Ethnopharmacognosy (Elective)

## COURSE TASKS and ASSESSMENT

- 1) Focus on the resources and lands at Olomana and Kupa ‘Aina for learning about land and culture, caring for the land including growth and harvest of foods that we will incorporate in our cooking.
- 2) The foods that we will choose and prepare will form the basis for our understanding chemistry and biology—nutrition and cooking. The foods will include Taro consistently and relate to health of people as well as the land. Can foods lead to health? Can foods lead to disease?
- 3) Focus on learning skills in the kitchen that will support safe food handling, preparation and cooking that is based on knowledge and respect!
- 4) DO the assignments as listed. See the connections between the land, the food, culture, health and disease.
- 5) Watch short videos that will be provided to support our primarily hands-on class! These videos will build on our class experiences at Olomana and Kupa ‘Aina, and WCC kitchen, and provide information that will support understanding Foods of Hawai‘i—what they are, how to choose and find them, how to prepare them and cook them...perhaps how to eat them.

## STUDENT LEARNING OUTCOMES

*As a result of taking this course, students will be able to:*

1. Describe the fundamental molecules that provide the structure, function, and chemical/physical properties of foods *in cultural context with respect for the land, culture and health.*
2. Describe microbiology and biotechnology in food systems.

3. Apply food science principles *with respect for the land, culture and health*.
4. Describe the local resources that can be used in preparing or preserving food *in general and for Foods of Hawai‘i*.

## **COURSE TASKS and ASSESSMENT**

Multidisciplinary teaching and learning approach through hands on experience with the land, and with food from the recipe appreciation, development and science—to the physical and chemical aspects of food and cooking, to understanding tools for cooking, safety including food and cooking. We will develop thoughtful uses for tools and understand how and why we—eat and cook. Respect for the land and culture as well as the science of food and cooking will be central to our experience.

### **Research Project and Presentation (50 points):**

A project appropriate to the course must be researched and presented in the class by the student, using materials and techniques discussed and implemented in class. Cultural aspects may be included in the project and will be discussed individually and in class.

## **GRADING**

The grades are assigned as follow:

Assignments and Quizzes ..... 50 points

1) Project Research and Presentation.....50

aquaponics/hydroponics

2) Project Research and Presentation (Taro).....50

Food Interview.....25

Final Exam .....100

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**Total      275 points**

Grade scales:

A = 90 – 100% of total points

B = 80 – 89% of total points

C = 70 – 79% of total points

D = 60 – 69% of total points

F = less than 60% of total points

I (incomplete), given at the INSTRUCTOR’S DISCRETION when you are unable to complete a small part of the course because of circumstances beyond your control. It is YOUR responsibility to make up incomplete work with a minimum level (or better) of achievement. Failure to satisfactorily make up incomplete work within the appropriate time period will result in a grade change from “I” to the contingency grade identified by the instructor (see catalog).

CR (credit), 60% or above in total points. You must indicate an intent to take the course as CR/NC and audit options in writing (see catalog). NC (no credit), below 60% or total points (see catalog). The NC grade will not be used as an alternative grade for an “F”. Last day to withdrawal with “W” grade is March 24, 2023 (see catalog).\* See catalog for specifics and calendar for dates in general and for I grades and NC grades. Taking this class as Credit/No credit is an option.

## **LEARNING RESOURCES**

The experience of the classes at Olomana and KupaAina and in our kitchen at WCC are our primary resources along with short videos to explain basics of food. Listed in our Laulima Resources are many additional resources to explore and/or download for the future! Our laulima site contains Resources and we will primarily focus on what we say and do in the formation of our course.

You will need to pay attention to Abbott and to URLs *as announced* in class.

## Laulima Resources PDFs

- Abbott, Isabella A. *La'au Hawai'i: Traditional Hawai'ian Uses of Plants*. Bishop Museum Press.
  - Handouts of the specific PDFs will be given for select chapters!
- Kraus, Beatrice H. *Ethnobotany of Hawai'i*. University of Hawai'i, Department of Botany, Manoa.

Note: The works above are written by people that understand/understood plants and their many uses by Polynesians and early Hawaiians. They are included here for you as resources—perhaps beyond our class.

In our class you will understand *what food does for us*. What has your culture (!) told you what to eat and why?

**PDF Resources More!** These Resources have been gathered by the two scientists/women who originated our class—Michelle Smith and Martine Bissonnette. Examples include:



## URL Resources:

- [Keoloha Domingo](https://HawaiiFoodandWineFestival.com/talent/kealoha-domingo/) (our chef)
  - <https://HawaiiFoodandWineFestival.com/talent/kealoha-domingo/>
  - <https://eatbreadfruit.com/blogs/ulu-ambassadors/kealoha-domingo>
- [10 Modern Hawai'ian Cookbooks We Love:](https://www.tasteofhome.com/collection/Hawaiian-cookbooks-we-love/)
  - [https://www.tasteofhome.com/collection/Hawai'ian-cookbooks-we-love/](https://www.tasteofhome.com/collection/Hawaiian-cookbooks-we-love/)
- [Cook Real Hawai'i YouTube](https://www.youtube.com/watch?v=itUGSCsQkLU) (<https://www.youtube.com/watch?v=itUGSCsQkLU>)



- [Taste Local Recipes with Cook Book Authors in Kona](https://bigislandnow.com/2018/11/23/taste-local-recipes-with-cook-book-authors-in-kona/) features Sonia Martinez as she includes recipes that are inspired by farmers markets on Hawai'i island.
  - <https://bigislandnow.com/2018/11/23/taste-local-recipes-with-cook-book-authors-in-kona/>

- [Wild Root Beer Recipe by Sunny Savage of Savage Kitchen](http://Hawaiiifarmersmarkets.org/wild-root-beer-recipe-by-sunny-savage-of-savage-kitchen/) (Hawai'i Farmer's Market Association)
  - <http://Hawaiiifarmersmarkets.org/wild-root-beer-recipe-by-sunny-savage-of-savage-kitchen/>

## LEARNING ACTIVITIES

- Work with each other on farming, harvest, and understanding recipes
- Take time to apply what we are learning to your lives including food, cooking and culture
- Utilize our team this Spring 23 semester for questions and conversations. Apply the experience as possible!
- Support services are also available at WCC **TRIO** for tutoring and **Ka Piko** for math, writing and technical support. These will be most important for students based at WCC..

## DISABILITIES ACCOMMODATIONS

If you have a physical, sensory, health, cognitive, or mental health disability that could limit your ability to fully participate in this class, you are encouraged to contact the Accessibility Counselor to discuss reasonable accommodations that will help you succeed in this class. Roy Inouye can be reached at (808) 235-7448, [royinouye@Hawaii.edu](mailto:royinouye@Hawaii.edu), or you may stop by Hale Kāko'o 106 for more information.

## SEX DISCRIMINATION AND GENDER-BASED VIOLENCE RESOURCES (TITLE IX)

Windward Community College is committed to providing a learning, working, and living environment that promotes personal integrity, civility, and mutual respect and is free of all forms of sex discrimination and gender-based violence, including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence, and stalking. If you or someone you know is experiencing any of these, WCC has staff and resources to support and assist you. To report an incident of sex discrimination or gender-based violence, as well as receive information and support, please contact one of the following:

UH Confidential Advocate Phone: (808) 348-0663 Email: [Advocate@Hawaii.edu](mailto:Advocate@Hawaii.edu)  
 Karla K. Silva-Park, Title IX Coordinator Phone: (808) 235-7468 Email: [karlas@Hawaii.edu](mailto:karlas@Hawaii.edu) Office: Hale Kāko'o 128

As a member of the University faculty, I am required to immediately report any incident of sex discrimination or gender-based violence to the campus Title IX Coordinator. Although the Title IX Coordinator and I cannot guarantee confidentiality, you will still have options about how your case will be handled. My goal is to make sure you are aware of the range of options available to you and have access to the resources and support you need. For more information regarding sex discrimination and gender-based violence, the University's Title IX resources and the University's Policy, Interim EP 1.204, go to [manoa.Hawaii.edu/titleix/](http://manoa.Hawaii.edu/titleix/)

## Nondiscrimination and Affirmative Action


*The University of Hawai'i is committed to a policy of non-discrimination on the basis of race, sex, age, religion, color, national origin, ancestry, disability, marital status, arrest and court record, sexual orientation, or veteran status in all of its programs, policies, procedures, or practices. This policy covers admission and access to, participation, treatment and employment in university program and activities.*

## ALTERNATE CONTACT INFORMATION

If you are unable to contact the instructor, have questions that your instructor cannot answer, or for any other issues, please contact the Academic Affairs Office:

Location: Alaka'i 121. Phone: (808) 235-742

## BIOL 106 Weekly Topics Spring 2023

Week	Topics—the foods we will include Taro!	
<b>1</b>  <b>Jan 31 &amp; Feb 2</b>	<p><b>1-31-23 OLOMANA</b></p> <p>Basic chemistry (organic vs inorganic) and molecules in biological systems (carbs, fats, proteins (incl. enzymes), &amp; nucleic acids)</p> <p>What is energy and where is it?</p> <p>What does COOKING do? What are states of matter and transformation?</p> <p>And flavors?</p> <p><b>2-2-23 WCC FOODS of Hawai‘i 1 Foods and Preparation and Cooking!</b></p>	
<b>2</b>  <b>Feb 7 &amp; 9</b>	<p><b>2-7-23 OLOMANA</b></p> <p>Molecules in biological systems CARBS, FATS, <i>PROTEINS</i>, &amp; nucleic acids</p> <p>Use of molecules by the body enzymes—do what? And cooking does what?</p> <div>  </div> <p><a href="#">ROOT BEER</a></p> <p>Hibiscus tea and acid-base reactions (pH)</p> <p><b>2-9-23 WCC FOODS of Hawai‘i OPEN</b></p> <p><b>Ethnobotany Garden, Foods and Preparation</b></p> <p><i>WE could go to WCC GARDENS this Thursday—harvest fruit and go to the kitchen and prepare/eat and follow up from Week 1 and perhaps garden OR go to Kupa ‘Aina this day instead of WCC</i></p>	
<b>3</b>  <b>Feb 14 &amp; 16</b>	<p><b>2-14-23 KUPA ‘AINA</b> Plant Kalo (Kāloa Kū Lua Mahina)</p> <p>Nutrition (chemicals needed - fuel, water, minerals)</p> <p>Reading nutrition labels and Calories (value per type of molecule, calculate food)</p> <p><b>2-16-23 WCC FOODS of Hawai‘i 2 Foods and Preparation and Cooking!</b></p>	



4  Feb 21 & 23	<b>2-21-23 OLOMANA</b>  What is meat? What is processed meat? What does cooking do to meat?  <b>2-23-23 WCC FOODS of Hawai'i 3 Foods and Preparation and Cooking!</b>	
5  Feb 28 & March 2	<b>2-28-23 OLOMANA</b>  What is an egg (biology and chemistry)?  Egg properties allow to emulsify, bind, and thicken and—in cooking?  <b>3-2-23 WCC FOODS of Hawai'i 4 Foods and Preparation and Cooking!</b>	
6  March 7 & 9	<b>3-7-23 OLOMANA Exploring Dairy and Making Cheese Video!</b>  <b>3-9-23 WCC FOODS of Hawai'i 5 Foods and Preparation and Cooking!</b>	
3	<b>SPRING Break 3-14 through 16</b>  <b>3-21-23 OLOMANA</b> SUGAR Sources (beet, cane, honey, maple) - (local sources: honey, sugar cane, and history) vs Alternative sweeteners (aspartamine, stevia ...) and DNA  <b>3-23-23 KUPA 'AINA...Kalo Follow up</b>	
8  March 28 & 30	<b>3-28-23 OLOMANA</b> Organisms that aid in cooking: yeast, bacteria & Fermentation process and Food Safety <i>with respect to/for</i> microbes! Biology of wheat—and Study of leavening agents—alcohol and fermentation  live cultures—do you like kimchi? Yogurt? Cheese? Sourdough bread?  <b>3-30-23 FOODS of Hawai'i 6 Foods and Preparation and Cooking!</b>	
9  April 4 & 6	<b>4-4-23 KUPA 'AINA Alcohol—fermentation</b>  Sources of alcohol (fermentation)Distillation and Effects on the body  <b>4-6-23 FOODS of Hawai'i 7 Foods and Preparation and Cooking!</b>	
10  April 11 & 13	<b>4-11-23 OLOMANA</b>  <b>Food in Hawai'i: cooking and food security</b>  Native, invasive, and toxic plants	

	<p>Uses and benefits</p> <p>Food security</p> <p><b>4-13-23 FOODS of Hawai'i 8 Foods and Preparation and Cooking!</b></p>	
<p><b>11</b></p> <p><b>April 18 &amp; 20</b></p>	<p><b>4-18-23 OLOMANA</b></p> <p><b>Food preservation—FLAVORS and DESIGN</b></p> <p>Ancient and modern methods of food preservation</p> <p><b>4-20-23 FOODS of Hawai'i 9 Foods and Preparation and Cooking!</b></p>	
<p><b>12</b></p> <p><b>April 25 &amp; 27</b></p>	<p><b>4-25-23 KUPA 'AINA</b></p> <p><b>4-27-23 FOODS of Hawai'i 10 LAST? Foods and Preparation and Cooking!</b></p>	
<p><b>13</b></p> <p><b>May 2 &amp; 4</b></p>	<p><b>5-2 OLOMANA</b></p> <p><b>5-4-23 FOODS of Hawai'i 11 LAST! Foods and Preparation and Cooking!</b></p>	
<b>FINAL</b>	<b>5-9 &amp; 5-11-23 OLOMANA—project presentations, final prep and final</b>	