**Science in the Kitchen**

**PHYS 1010ID - Section**

**Spring 2019**

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| **Instructor**  | Liana Karthikeyan | **Class Number** | xxxx |
| **E-mail**  | LKarthikeyan@citytech.cuny.edu | **Day**  | Thursday |
| **Phone**  | (718) 260-5953 | **Location**  | TBD |
| **Office**  | TBD | **Time**  | 2:15 p.m. – 4:45 p.m. |
| **Office** |  | **Class Hours**  | 1.5 hours  |
| **Hours** | TBD | **Lab Hours** | 3.5 hours |
|  |  | **Credits** | 3 credits |

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| **Instructor**  | Robert Walljasper | **Class Number** | xxxx |
| **E-mail**  | RWalljasper@citytech.cuny.edu | **Day**  | Thursday |
| **Phone**  | (718) 260-5253 | **Location**  | P407(?) / N201 |
| **Office**  | N221 | **Time**  | 5:00 p.m. – 6:34 p.m. |
| **Office** |  | **Class Hours**  | 3.0 hours  |
| **Hours** | TBD | **Lab Hours** | 1.0 hours |
|  |  | **Credits** | 3 credits |

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**Course Description**

This interdisciplinary course is designed to introduce the physical concepts that are behind food cooking processes to non-science majors. The use of mathematics is limited to simple calculations. Laboratory work complements the course to gain hands-on experience and make use of the physical concepts in the kitchen for the students. Laboratory exercises are performed to explain the scientific method and to allow students to learn how to perform experiments and compose a lab report.

**Course Objectives**

Upon completion of PHYS 1010 [BIO 1010], students will be able to

* 1. Purposefully connect and integrate across-discipline knowledge and skills to solve problems
	2. Synthesize and transfer knowledge across disciplinary boundaries
	3. Comprehend factors inherent in complex problems
	4. Apply integrative thinking to problem-solving in ethically and socially responsible ways
	5. Recognize varied perspective
	6. Gain comfort with complexity and uncertainty
	7. Think critically, communicate effectively, and work collaboratively
	8. Become flexible thinkers

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| **Course Learning Outcomes** | **Assessment Methods** |
| Upon successful completion of this course the student will be able to: |  |
| Identify relevant scientific principles | Lab Report and Worksheets |
| Integrate and process interdisciplinary knowledge.  | Midterm and Final Exam and Oral Presentations |
| Improve quality of prepared food | In Class Discussions and Research Projects/ Oral Presentations |
| Learn how to apply scientific method to laboratory experiment | Lab Reports, Graphs and Worksheets |
| Develop hypothesis, data and error analysis | Lab Report, Graphs, and Worksheets |
| Understand how to use measuring devices | Lab Assessment |
| Apply working in groups and communicating effectively | The students will be working in groups in the labs and discussing their findings. They will be submitting lab reports. Research Paper & Oral Presentations also involve team work and effective communication. |

**Prerequisites**

MATH 1190 or higher

**Recommended Text**

On Food and Cooking, McGee, Harold, John Wiley & Sons, 2004.

Lab Manual, Biology and Hospitality Management Departments. The Biology labs will be available in the Open Educational Resources (OER) format.

**Suggested Texts and Readings**

 None

**Course Materials**

All students must have a complete set of tools, as well as clean uniforms as required by the respective departments. Please consult instructor for a complete list of tools, uniform requirements, and suppliers. Students are required to bring their tools and text/lab manual to every session as required. You must be in full uniform and properly groomed to participate in class each week.

**Students Are Required To Bring Their Tools To Every Session!!**

**Grading System**

Lab Reports and Homework 25%

Research Project 20%

Midterm Exam 20%

Final Written Exam 20%

Oral Group Presentations 15%

Total 100%

**Grading Procedure**

**Assessment of Students Learning Outcomes**

Lab Assessment – A combination of lab reports, graphs, and worksheets are used to demonstrate knowledge from labs

Research Project Assessment – Descriptive paper of interdisciplinary research on pre-assigned topics like “Development of Cooking Methods and Techniques”. Groups of 4 students will have to research the topic and write a 2-3 pages paper, as well as present the findings towards the end of the semester.

Midterm Exam Assessment- Multiple Choice

Final Exam Assessment- Multiple Choice

**Select Assignments**

**Professionalism and Participation**

The Department of Hospitality Management follows industry standards in order to educate, develop and mentor future hospitality and tourism professionals. In order to successfully complete a course, students must consistently participate in class and meet deadlines.

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| **Week** | **Lecture** | **Lab** |
| 1 | Introduction/orientation, lab procedures, lab reports, Scientific Method, Biology basic concepts/overview |   |
| 1/31/2019 |   |
| 2 | Microorganisms, Cellular History, Food Safety, Kingdoms and Domains | Lab 1 - Microscopy |
| 2/7/2019 |   |
| 3 | Building blocks of life, essential molecules |   |
| 2/14/2019 |   |
| 4 | Cell structure, plant growth, Photosynthesis | Lab 2 – Fungi Growth |
| 2/21/2019 |
| 5 | Foundation of taste, gustation, tastants, olfaction, texture, temperature |   |
| 2/28/2019 |   |
| 6 | Milk Biology, combination of protein, fat, and sugar | Lab 3 – Applications for Ice Cream |
| 3/7/2019 |   |
| 7 | Introduction to Seasonings, Spices, Herbs, History  |   |
| 3/14/2019 |   |
| 8 | Structure and Functions of Proteins, Muscle composition. | Lab 4 – Protein Cooking Applications |
| 3/21/2019 |
| 9 | Midterm exam |   |
| 3/28/2019 |   |
| 10 | Fermentation and anaerobic respiration | Lab 5 – Fermentation |
| 4/4/2019 |   |
| 11 | Nutrition and Diet Analysis |   |
| 4/11/2019 |   |
| 12 | Diary Cultures, Cheese, Sour Cream and Yogurt | Lab 6 – Growing Dairy Culture |
| 4/18/2019 |   |
| 13 | Digestion and Metabolism |   |
| 5/2/2019 |   |
| 14 | Osmosis, Diffusion | Lab 7 - Curing and Preservation |
| 5/9/2019 |   |
| 15 | Final Exam, Presentation  |   |
| 5/16/2019 |   |   |

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**Conduct:**

Students enrolling in the hospitality management program at New York City College of Technology assume the obligation of conducting themselves in a manner compatible with the College’s function as an educational institution. Misconduct for which students are subject to discipline may include but not limited to: dishonesty, cheating, plagiarism, or knowingly furnishing false information to the College. Students who cheat or plagiarize may receive a failing grade for the course in which the act occurred. Students who engage in any misconduct may be subject to dismissal from the College.

**Revision of the syllabus**

If circumstances warrant, the contents of this syllabus and course may be revised without prior notice, at the discretion of the instructor and in concert with the needs of the department and the college.

**MISSION STATEMENT**

The mission of the Department of Hospitality Management of New York City College of Technology is to provide students with a hospitality career education that integrates applied management practices and theory with liberal arts and sciences. To fulfill its mission, the department will:

* offer a comprehensive applied management curriculum;
* provide students with the necessary professional and communications skills for successful careers;
* foster an understanding of social responsibility through involvement in community service.

**NYC COLLEGE OF TECHNOLOGY STATEMENT ON ACADEMIC INTEGRITY**

Students and all others who work with information, ideas, texts, images, music, inventions, and other intellectual property owe their audience and sources accuracy and honesty in using, crediting, and citing sources. As a community of intellectual and professional workers, the College recognizes its responsibility for providing instruction in information literacy and academic integrity, offering models of good practice, and responding vigilantly and appropriately to infractions of academic integrity. Accordingly, academic dishonesty is prohibited in The City University of New York and at New York City College of Technology and is punishable by penalties, including failing grades, suspension, and expulsion. The complete text of the College Academic Integrity Policy Manual may be found on the College website.

**STATEMENT OF ACADEMIC DISHONESTY AND PLAGARISM**

As stated in the Academic Integrity Policy Manual, "academic dishonesty occurs when individuals plagiarize or cheat in the course of their academic work. Plagiarism is the presenting of someone else’s ideas without proper credit or attribution. Cheating is the unauthorized use or attempted use of material, information, notes, study aids, devices or communication during an academic exercise."

**STATEMENT OF CLASSROOM BEHAVIOR**

Each student has the right to study and learn in a comfortable, safe, supportive environment that promotes self-esteem – free of fear, humiliation, intimidation, offensive or suggestive language.

**PROFESSIONALISM AND PARTICIPATION**

The Department of Hospitality Management follows industry standards in order to educate, develop and mentor future hospitality and tourism professionals. In order to successfully complete a course, students must consistently participate in class and meet deadlines.

**USE OF ELECTRONIC DEVICES**

As stated in the Student Handbook, the use of cellular phones and audio equipment in all academic and study areas of the college is prohibited. Students are not permitted to take calls or text message during class.

Students may not use their cell phones as calculators. In some instances, an instructor may allow the use of personal electronic devices for in class activities.

**ORAL PRESENTATION STYLE STATEMENT:**

The Hospitality Management Department has developed a standardized format for all oral presentations. Refer to the Oral Presentation Rubric.

**WRITING STYLE STATEMENT [leave in?]**

The hospitality management department has developed a standardized format for all written assignments. Written work must be prepared using APA Style Publication Manual of the American Psychological Association as a reference guide. All editorial formats, abbreviations, use of statistics, graphs, citations and references must conform to APA style. Footnotes are not permissible. Visit the City Tech Library website for APA Style Guides. (<http://libguides.citytech.cuny.edu/citations/APA>)

Unless otherwise instructed:

* All papers are to be simply bound with a staple in the upper left-hand corner.
* No report covers are to be used.
* All papers must be computer generated,
* Double-spaced on white bond or computer paper (8½ ″ x 11″ with no holes)
* Standard margins (1″ top x 1″ bottom x 1″ left x 1″ right),
* Courier or Times Roman typeface, 12 points.
* Correct spelling, sentence structure and grammatical construction are expected.
* Proofreading is a given!

Standard title (cover) page must include:

* Assignment name centered on the title page;
* One double space below, type student’s name
* One double space below, type course title / section number
* One double space below, type instructor’s name
* One double space below, type due date
* All entries are centered under assignment name
* Exceptions to standardized format: **Memoranda** follow a standard memo format. (see template)
* Internship reports must be spiral bound.

**Academic Calendar** *(see handout)*

Selected Bibliography

Chartier, F. (2012). *Taste Buds and Molecules: the Art and Science of Food, Wine, and Flavor.* Hoboken: John Wiley & Sons, Inc. .

Cook's Illustrated. (2012). *The Science of Good Cooking.* Brookline, Massachusetts: America's Test Kitchen.

Field, S. Q. (2012). *Culinary Reactions.* Chicago: Chicago Review Press, Inc.

Gisslen, W. (2015). *Professional Cooking* (8th ed.). Hoboken: John Wiley & Sons, Inc.

Katz, S. E. (2012). *The Art of Fermentation.* White River Junction, Vermont: Chelsea Green Publishing.

Laing, R. (2018). *Ditch the Dirt: Grow Edible Hydroponic Plants at Home.* Dovetail.

McGee, H. (2004). *On Food and Cooking: the Science and Lore of the Kitchen.* New York: Scribner.

Mouritsen, O., & Styrbaek, K. (2017). *Mouthfeel: How Texture Makes Taste.* New York: Columbia University Press.

Pervival, B., & Percival, F. (2017). *Reinventing the Wheel: Milk, Microbes, and the Fight for Real Cheese.* Oakland, California: University of California Press.

Roberts, J. P. (2017). *Salted & Cured: Savoring the Culture, Heritage, and Flavor of America's Preserved Meats.* White River Junction, Vermont: Chelsea Green Publishing.

*The Food Lab.* (2015). New York: W. W. Norton & Company Inc.

This, H., & DeBevoise, M. (2008). *Molecular Gastronomy: Exploring the Science of Flavor.* New York: Columbia University Press.

This, H., & Gladding, J. (2010). *Kitchen Mysteries: Revealing the Science of Cooking.* New York: Columbia University Press.

Turkell, M. H. (2017). *Acid Trip: Travels in the World of Vinegar.* New York: Abrams.

Vega, C., Ubbink, J., & Van Der Linden, E. (Eds.). (2013). *The Kitchen as Laboratory.* New York: Columbia University Press.