



Directions for Undergraduate Program Director Reports:

1. Talk to students in your major, ask around if there are any current academic issues.  
(ex: class conflicts within the major, issues with professors, etc)
2. Look at Degree Navigator, write down the course requirements
3. Formulate a list of things you would like to know about the program (corporate connections with the university, current research projects, opportunities for students to get involved, etc)
4. Email Undergraduate Program Director and Arrange Appointment
5. Fill out Undergraduate Report Sheet
6. email to [vicepresident@sgc.rutgers.edu](mailto:vicepresident@sgc.rutgers.edu) and complete by December 4th



Name: Manohar Tripathi \_\_\_\_\_

Major: Food Science \_\_\_\_\_

Date: 12/2/2018 \_\_\_\_\_

Semester: Fall 2018 \_\_\_\_\_Undergraduate Program Director: Dr. Chitra Ponnusamy \_\_\_\_\_

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## I. Major Options - What options are offered within the major? How do they differ?

**Research:** This option includes the same foundation courses in the General Food Science option but emphasizes additional basic science and advance level food science courses. These additional courses make graduates of this option attractive to employers, but also prepare students for graduate studies or entrance into professional programs (medical school, dental school).

**Food Science & Management Economics:** This option is offered in conjunction with Agricultural, Food and Resource Economics program and is designed for students interested in the management aspects of the food industry. While the option requirements of both programs are similar, students registered in food science may take additional courses in physical and food sciences.

**General:** This option provides students with core courses in food science and technology and the tools to develop quantitative thinking skills that lay the foundation for working individually and in teams and to grow as a professional. Flexibility exists in this option for students that so desire to explore to greater depth subject areas outside of the food science program. Graduate work in Food Science may also be an option.

**Sustainability:** This option includes the foundation courses, basic science and advance level Food Science courses; courses related to Sustainability have been incorporated within the option.

II. Total number of students within the major

The program has approximately 150 undergraduate students and 125 graduate students

III. Goals within the major - What are expectations of students post-graduation?

The undergraduate program of Food Science provides an exciting and challenging academic environment that encourages the acquisition and integration of knowledge within the field of food science and technology and places it within the context of societal needs. The program will provide the student with the tools to develop quantitative thinking skills that lay the foundation for working individually and in teams and to grow as a professional. The program emphasizes a strong foundation in the basic sciences applied to solving practical problems related to the production and safety of food and food ingredients. The program stresses communication skills enhancing student career opportunities within and beyond the area of food science

IV. Major Courses - What is the goal of each course? What should students be learning?

Science of Food (11:400:103): To exhibit a basic understanding of the Biology, Chemistry and Engineering Sciences that comprise the foods we eat. To identify and critically assess ethical and societal issues in science pertaining to current and future food related controversies. To acquire skills for and tools for life-long learning.

Food and Health (11:400:104): Food and Health (11:400:104) is a 3-credit course about "personal" nutrition and its relationship to health by way of food, food components and nutraceuticals. This course will enable students to take a critical look at what they eat and give them a new perspective on how food affects them and their body.

Principles of Food Science (11:400:201): Gain an overview of Food Science and its interdisciplinary nature in an introduction to: 1. Common food systems, their composition, behavior, and uses fundamental molecules (water, proteins, lipids, carbohydrates) that provide the structure, function, and chemical/physical properties of foods 2. Microbiology and biotechnology in food systems 3. Physical, chemical and microbial forms of food deterioration and preservation 4. Various forms of processing used for food preservation and their effects on food quality.

Principles of Food Science Lab (11:400:202): 1. Become familiar with physical and chemical characteristics of foods, food behaviors under different conditions, and food processing operations. 2. Observe fundamental science concepts at work in food materials, learn to apply theory from lecture to real foods. 3. Use scientific method in investigating properties and changes in foods. 4. Develop a basic understanding of food composition and structure/function/behavior relationships, relating molecular properties to food characteristics, quality, and microbial utilization. 5. Develop skills in summarizing and communicating scientific research simply and succinctly

Food Processing Technologies (11:400:301): Upon completion of the course students should be able to understand general processing flow for various food products, physical principles of operation for various types of equipment and impact of the processing on the physical, chemical and sensory properties of the food products. Additionally, they learn on how to select the food processing method most suitable for specific application. The students will complete laboratory work cooperatively in small groups, and will present a final project to the entire class.

Food Processing Engineering (11:400:302) : The purpose of this course is to help the students to understand, demonstrate, and apply the concepts and principles of food processing and engineering. The topics to be covered are mass and energy balances, fluid mechanics, psychometrics, heat and mass transfer, preservation process, dehydration, food packaging, and others. The emphasis is to develop the analytical skills of the students to solve practical problems.

Food Analysis (11:400:304):

V. Concerns/Student issues with classes? How to resolve, suggestions?

Principles of Food Science: Having TA's go to the IFNH building to get clean water to prepare food for laboratory experiments and demonstrations.

Having the water bottle filling stations within the Food Science building would be greatly appreciate among students and faculty.

VI. Things going on within the major (Research, Visitors, Talks, Seminars within the major)

Research with Dr.Karl Matthews on the efficacy on certain common household cleaning products on produce that can be applied to third world countries such as India and Bangladesh.

Research with Dr. Paul Takishtov on the applications of 3D food printing and its practical uses within the food industry.

## VII. Research Opportunities

Dr. Richard Ludescher is currently on sabbatical to Oxford but his research is around the subject of luminescence spectroscopy and working with candy.

Dr. Karen Schaich in regards to her research on cataloging lipid oxidations and their products, derivatives and pathways and their possible applications within food systems.

## VIII. Job Outlook, suggestions for students in this major (ex: organizations to join, news to pay attention to)

Organizations to pay attention to is the IFT (Institute of Food Technologists) about current developments in the realms of sustainability, product development and overall shifts within the food science industry.

## IX. Changes within the major in the upcoming year?

Addition of the sustainability option within the undergraduate Food Science program.

## X. Other Suggestions