

# Fall 2022 Undergraduate Program Director (UPD) Report

**Em Vesper** - Mon, Nov 28, 2022 3:48 PM

SEBS Governing Council

Received

## General Information

Your name

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Major

Plant Biology

Date of meeting

11/23/22

Class year

2024

Undergraduate Program Director

Dr. Nrupali Patel

## UPD Phone

848-932-6392

## UPD Email

npatel@sebs.rutgers.edu

## Major website link (if available)

<https://plantbiology.rutgers.edu/undergrad/plantbiology/>

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## Major Information

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

The Plant Science Major, General Plant Biology option is for students intending to pursue graduate study or research careers in laboratories. The Plant Science Major, Horticulture and Turfgrass Industry option is for students intending to pursue business careers in plant supported industries. The Major in Plant Science, Natural Products Option emphasizes historical and cultural botany, economic botany (the study of the interaction of people and plants), indigenous and modern medicinal plants, and practical plant production. The Ethnobotany and Global Health specialization is designed for students with an interest in the roles plants play in human health, environmental issues, public policy, or sustainability. The Production of Medicinal and Aromatic Plants specialization is designed for students with an interest in the additional skills needed for indoor and field cultivation of horticultural plants used for medicinal or other purposes.

### Total number of students within the major (give an estimate from UPD if the exact number is unknown)

60-70

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

Students completing degree requirements will be able to: 1. Describe basic knowledge about plant structure and function, fundamentals of plant growth and physiology, and principles of horticulture [technical proficiency]; 2. Summarize broadly the role of plants in agriculture, society and the

environment [context]; Communicate, in written and oral forms, plant science knowledge to peers and others in society [communication]; and 3. Critically formulate hypotheses, interpret data, and apply basic principles and practices of plant science to solve fundamental and practical problems [critical thinking].

List 2-3 high-level major courses. What is the goal of each course? What should students be learning?

11:776:410 Plant and Innovative Technologies for Bioenergy: Students will be able to identify and discuss issues associated with biomass/biofuels use, primarily in the US; describe the biochemistry and production characteristics of biomass crops sustainable for bioenergy and mitigating climate change; and examine and discuss innovative biomass conversion technologies suitable for potential energy from plant-based agriculture and other sustainable biomass. 11:776:452 Plant Tissue Culture and Engineering: Students will be able to comprehend and describe various protocols of plant cell, tissue, and organ culture as well as the scientific principles underlying the protocols; apply plant tissue culture technology for clonal propagation, assisting plant breeding and plant improvement, recovering plants from transformed cells, and production of valuable plant biochemicals; explain and demonstrate various protocols of plant gene transfer technology; describe the underlying principles of each step of the plant gene transfer protocols; and describe the methods and principals for the validation of transgene integration into plant genome. 11:776:442 Agroecology: Students will be able to recognize the contributions that plant products make to human well-being; critically examine the problems the world faces regarding food production, trade, and consumption; recognize and defend one's own values regarding food production, trade, and consumption; and discuss and communicate the concept of sustainability as it relates to agriculture.

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## Student Issues

Are there any concerns/student issues with classes? Are there any suggestions for solutions to these issues?

Due to the limited number of sections offered for plant science courses (both required courses and electives), it can be difficult to fulfill certain requirements or take certain classes. More sections would help students have an easier time getting the classes they want and/or need. Additionally, some students in the General Plant Biology option wish there were more experienced with technology and software related to the field, as when they look to complete their experience-based education requirement or work in the field, they have very limited knowledge about software used to analyze data (such as R).

From the perspective of the UPD or faculty members, what could be improved upon in the major (anything, not just related to classes)? Are there any suggestions for solutions to these

## issues?

Students are wanting/needing to learn in a remote fashion, and the major is not catering to that right now. Sections should be offered in different formats (synchronous, asynchronous, and hybrid) instead of only trying to revert to pre-pandemic learning (synchronous/in-person only). There is a lack of faculty members who are willing to teach courses, which prevents this and causes problems for students in the long run. Dr. Patel also wishes to improve the connection between the department, students, and services offered to both, as well as all three components' connections to the industry. Students have trouble figuring out what their options are after getting a degree in the major, so these connections being stronger could help students discover these options. Dr. Patel is working on updating the courses and major to be more modern and relevant to the current day. While the graduate program is very focused on getting graduate students involved with faculty members' research through weekly talks, Dr. Patel hopes to start inviting undergraduate plant science students to these as well. She also hopes to offer undergrads credit for these weekly talks, as well as advertise research in the plant biology department more. This, alongside more active recruitment for the major, will hopefully result in a higher job placement rate.

## Things going on within the major (Visitors, Talks, Seminars within the major)

There is a seminar series as part of a graduate course that all students can attend (fall and spring), along with the Plant Science Graduate Research Symposium and G.H. Cook research presentations (both in the spring).

## Suggestions for students in this major (ex: organizations to join, news to pay attention to)

Rutgers Undergraduate Students for the Plant Sciences is currently a preliminary student organization (GroupMe: [https://groupme.com/join\\_group/84613787/jGVW9atU](https://groupme.com/join_group/84613787/jGVW9atU)). Visit the major's Sakai site and the Plant Biology website for updated news articles. SEBS sends out occasional career emails that students should read. Dr. Patel also recommends looking out for information regarding upcoming plant science study abroad programs.

## Changes within the major in the upcoming year?

There are new study abroad options that are going to become available. There will be options to travel to other countries for a semester and take classes at certain international universities, which will fulfill requirements for the Rutgers major. Additionally, there will be a winter course offered (not this year, but next) as a collaboration between the food science and plant biology departments, in which students will earn 3 credits for travelling to India and learning about their agricultural systems.