I. Instructor Contact Information and Communication

The best way to communicate with the instructors is via email to the email addresses below. The instructors can be also be contacted over the phone or in person during office hours or by appointment. Students that contact the instructors via email should expect a response by the next business day. Students are expected to check their USF email or Canvas on a daily basis to make sure they have the latest information or updates regarding the course.

**Dr. Ioannis Dogaris**, 813-974-8982, [idogaris@usf.edu](mailto:idogaris@usf.edu)
Office: CGS 248
Office Hours: Thursday 4:00-6:00 pm or by appointment

**Dr. George Philippidis**, 813-974-9333, [gphilippidis@usf.edu](mailto:gphilippidis@usf.edu)
Office: CGS 243A
Office Hours: Tuesday 4:00-6:00 pm or by appointment

II. First Week Attendance Policy

All on campus students are required to attend class the first day the class meets. Online students need to email the instructors confirming attendance during the first day. Students unable to attend must contact the instructor prior to the first day to ensure they are not dropped from the course.

III. Course Overview/Description

In this course, agricultural and biological resources (bioresources) will be explored as an essential means of supporting a sustainable future for the planet. Efficient and sustainable methods for producing food, fiber, bio-based products, and renewable energy will be presented along with their environmental impact and supply chain considerations. Emphasis will be placed on the
prospects of plant biomass and algae to serve as renewable raw materials for a sustainable economy. The course will cover topics of global challenges in energy, water, and food security, and the interconnections among the three resources with a systems thinking approach. The course will teach students a holistic approach to dealing with resource management, identifying and utilizing positive interactions and avoiding negative repercussions.

IV. Course Objectives

By the end of this course, students will be able to:

1. Assess the benefits, opportunities, and challenges of bioresources in today's economy
2. Understand how nature works regarding the climate, biodiversity and the flow of natural resources, and realize the impact of human activity on the environment
3. Recognize the interactions between energy, water and food and the how their sustainability will safeguard the future of humans and the ecosystem on the planet
4. Understand the variety of technologies currently employed and under development for production of bioenergy and bioproducts from biomass and algae
5. Comprehend the life cycle of products derived from bioresources and the green supply chain
6. Develop critical thinking about the socio-economic aspects of the bioeconomy

V. Required Text, Materials and Technology

Reference books

- “Forests, Business and Sustainability” by Rajat Panwar, Taylor and Francis, 2015.
Bioresources for a Sustainable Future


The above books are available online to students through USF library access. The list of the relevant chapters from the textbooks can be found in the section “VI. Course topics and schedule”.

Reviews, reports, and research publications

Lecture presentations
The presentation of each lecture will be available to all students on Canvas.

Technology requirements
Internet connection, Word/PowerPoint processing software, PDF reader.

VI. **Course topics and schedule (subject to change)**

<table>
<thead>
<tr>
<th>Date</th>
<th>Course Topic</th>
<th>Resource</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td><strong>Module 1:</strong> Natural resource</td>
<td>• Biorenewable Resources – Ch 1</td>
</tr>
<tr>
<td>Aug. 25</td>
<td>challenges</td>
<td>• Sustainability Science – Ch 4 (84-93 and 96-102)</td>
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<tr>
<td></td>
<td><strong>Additional reading:</strong></td>
<td>Understanding the Nexus. Background Paper for the Bonn2011 Conference (7-13)</td>
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<tr>
<td>Week 2</td>
<td><strong>Module 2:</strong> Climate change,</td>
<td>• Introduction to modern climate change - Ch 1.1, 1.2,</td>
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<tr>
<td>Sep. 1</td>
<td>adaptation, and mitigation</td>
<td>2.1, 5.1, 5.4, 7.6, 9, 11, 12</td>
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<td></td>
<td><strong>Additional reading:</strong></td>
<td>IPCC Climate Change 2014 (2-31)</td>
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<tr>
<td>Week 3</td>
<td><strong>Module 3:</strong> Biodiversity in the</td>
<td>• Biodiversity: An introduction – Ch 1, 2.1, 2.2, 2.4, 4, 5, 6</td>
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<tr>
<td>Sep. 8</td>
<td>ecosystem</td>
<td>• Sustainability Science – Ch 9 (272-290)</td>
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<td></td>
<td><strong>Additional reading:</strong></td>
<td>Novel Plant Bioresources – Ch 1</td>
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<tr>
<td>Week 4</td>
<td><strong>Module 4:</strong> Sustainable water</td>
<td>• Sustainability Science – Ch 12.3</td>
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<tr>
<td>Sep. 15</td>
<td>management</td>
<td>• Sustainability: Multidisciplinary Perspectives – Ch 6 (112-133)</td>
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<td><strong>Additional reading:</strong></td>
<td>Understanding the Nexus. Background Paper for the Bonn2011 Conference (16-35)</td>
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<td>Week 5</td>
<td><strong>Module 5:</strong> Crop sustainability</td>
<td>• Biorenewable Resources – Ch 4.3 (78-82, 84-87), 4.4 (89-92), 4.5, 4.6, 5 (103-120, 129-135), 11 (261-273)</td>
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<tr>
<td>Sep. 22</td>
<td></td>
<td><strong>Additional reading:</strong> Good environmental practices in bioenergy feedstock production, FAO, 2012 (Ch 1)</td>
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<td>Week 6</td>
<td><strong>Module 6:</strong> Sustainable forestry</td>
<td>• Biorenewable Resources – Ch 4 (82-83), 5 (120-125)</td>
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<tr>
<td>Sep. 29</td>
<td></td>
<td>• Forests, Business and Sustainability – Ch 10</td>
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<tr>
<td></td>
<td><strong>Additional reading:</strong></td>
<td>Good environmental practices in bioenergy feedstock production, FAO, 2012 (Ch 2.1, 3.2, 3.4, 3.13)</td>
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<tr>
<td>Week 7</td>
<td>**Midterm Exam and Research Project</td>
<td>Modules 1, 2, 3, 4, 5, and 6.</td>
</tr>
<tr>
<td>Oct. 6</td>
<td>Progress Review**</td>
<td></td>
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</tbody>
</table>
| Week 8 | Oct. 13 | **Module 7:** Marine bioresources | - Aquaculture ecosystems – Ch 1, 2 (37-41, 65-67), 5 (139-142), 6 (164-167)  
- Biorenewable Resources – Ch 4 (87-89), 5 (125-129)  
- Sustainability Science – Ch 12.5 (401-404)  

**Additional reading:**  
- Algal Culturing Techniques – Ch 15 (219-233)  
- Sustainable Food Production – Ch: Sustainability Science in Aquaculture (206-222) |
| Week 9 | Oct. 20 | **Module 8:** Food sustainability | - Food Security, Nutrition and Sustainability – Ch 1 (1-15), 6 (97-109), 14 (223-235)  
- Sustainability Science – Ch 11 (344-357, 363-377) |
| Week 10 | Oct. 27 | **Module 9:** Biomass and algae for energy | Biorenewable Resources – Ch 4.4 (92-94), 6 (137-154), 7, 8, 9, 11.4 (273-280), 11.5  

**Additional reading:**  
- 2016 Billion-Ton Report, DoE |
| Week 11 | Nov. 3 | **Module 10:** Biomass and algae for bioproducts | Biorenewable Resources – Ch 6.5, 6.6, 10, 11.4.3  

**Additional reading:**  
- Algal Biorefineries – Ch: Commercial products from algae (275-292) |
| Week 12 | Nov. 10 | **Module 11:** Life cycle analysis and green supply chain | - Life Cycle Assessment Handbook – Ch 1, 2, 21  
- Supply Chain and Logistics in National, International and Governmental Environment – Ch 9  

**Additional reading:**  
- Lautala, Pasi T., et al. "Opportunities and challenges in the design and analysis of biomass supply chains." |
| Week 13 | Nov. 17 | **Module 12:** Socio-economic aspects of bioresources | - Biorenewable Resources – Ch 12, 13  

**Additional reading:**  
| Week 14 | Nov. 25 | USF Holiday (Thanksgiving) | NO CLASS |
VII. Basis for Final Grade

There will be 2 closed book exams and a graded research project assignment. Class participation with regards to discussions posted on Canvas is expected. Test material will be taken from lecture presentations and assigned readings. The instructors reserve the right to assign grades of +/- and to apply a curve (at their discretion per USF policies). The breakdown of grading is as follows:

- Midterm Exam: 35%
- Final Exam: 35%
- Research Project: 20% (10% presentation and 10% report)
- Class Participation: 10%

VIII. Course Assessment Types

There will be one graded research project assignment. The research project is intended to foster critical, creative, and practical thinking and to develop effective interpersonal and communication skills. Students will select a topic among those discussed in the course (listed in the “Course Topics and Schedule” table above) and will perform a literature search to identify, analyze, and discuss key issues. The goal is to give students the opportunity to gain insight into a specific topic that is of particular interest to them among the real-world themes studied in this course. The research performed and its dissemination will not only enrich the students’ knowledge, but will also sharpen their critical thinking as they become more familiar with the diverse aspects of renewable bioresources for a sustainable future. Students will share their findings with their classmates during a professional presentation and will produce an individual written report. Detailed instructions will be provided through Canvas.

IX. Course Policies on Grades

Automatic make-up examinations will be given ONLY for students involved in official University of South Florida activities (i.e. athletics, conferences, field trips, etc.). Students away on official USF business during scheduled exams must present a valid excuse on official USF stationary signed by the appropriate college personnel. Students missing examinations due to illness must verify their health problems with signed documentation from an acceptable corroborative source (e.g. your
doctor). Students needing to miss examinations due to chronic health conditions or to death in the family should consult with the instructor. Late assignments will not be graded unless the instructor has granted permission in advance. The current university policy concerning incomplete grades will be followed in this course. Incomplete grades are given only in situations where unexpected emergencies prevent a student from completing the course and the remaining work can be completed within a specified period of time. The instructor is the final authority on whether you qualify for an incomplete. Incomplete work must be finished by the end of the subsequent semester or the “I” will automatically be recorded as an “F” on your transcript.

X. Course Policies on Student Expectations

Disability Access:
Students in need of academic accommodations for a disability may consult with Students with Disabilities Services (http://sds.usf.edu/) to arrange appropriate accommodations. Students are required to give reasonable notice prior to requesting an accommodation.

Academic Conduct:
The University of South Florida policies apply to all aspects of this course. There is zero tolerance for cheating, plagiarism, and other forms of academic dishonesty. The application project paper MUST include proper citation of sources; failure to do so will result in a grade of F. Any infringement will result in the maximum prosecution of the offender by the University of South Florida and may result in various consequences ranging from a course grade of F to academic suspension.

Emergency Procedures/Academic Integrity:
In the event of an emergency, it may be necessary for the USF campus to suspend normal operations. During this time, USF may opt to continue delivery of instruction through methods that include but are not limited to: learning management system (Canvas), email and/or alternative schedule. It is the responsibility of the student to monitor their courses for specific communication, and the main USF, College and department websites, emails and MoBl messages for important general information.

Netiquette Guidelines:

General Communication Guidelines

1. Act professionally in the way you communicate. Treat your instructors and peers with respect, the same way you would do on a face-to-face environment. Respect other people’s ideas and be constructive when explaining your views about points you may not agree
with.

2. Be sensitive. Be respectful and sensitive when sharing your ideas and opinions. There will be people in your class with different linguistic backgrounds, political and religious beliefs or other general differences.

3. Proofread and check spelling. Doing this before sending an email or posting a thread on a discussion board will allow you to make sure your message is clear and thoughtful. Avoid the use of all capital letters, it can be perceived as if you are shouting, and it is more difficult to read.

4. Keep your communications focused and stay on topic. Complete your ideas before changing the subject. By keeping the message on focus you allow the readers to easily get your idea or answers they are looking for.

5. Be clear with your message. Avoid using humor or sarcasm. Since people can’t see your expressions or hear your tone of voice, meaning can be misinterpreted.

**Email and Discussion Board Guidelines:**

1. Use the subject line effectively by using a meaningful line of what your email or discussion is about.

2. Keep your emails and postings related to the course content. You should not post anything personal on a discussion board, unless is requested by the instructor.

3. Any personal, course or confidential issues should be directly communicated to the instructor via email. The discussion boards are public spaces; therefore any issues should not be posted there.

**XI. Help Resources**

**Canvas Technical Support:**
If you have technical difficulties in canvas, you can find access to the canvas guides and video resources in the “Canvas Help” page in the homepage of your canvas course. You can also contact the help desk by calling 813-974-1222 in Tampa, or emailing help@usf.edu.
XII. Instructors profile

Ioannis Dogaris, Ph.D.
Instructor and Postdoctoral Fellow, Sustainable Energy

Dr. Dogaris is a researcher in sustainable biofuels and bioproducts. He holds a Ph.D. in Chemical Engineering-Biotechnology from the National Technical University of Athens (NTUA), Greece, and Bachelor’s and Master’s degrees in Biological Applications and Technologies from the University of Ioannina, Greece. Currently, Dr. Dogaris is a research and teaching postdoctoral fellow at the Patel College of Global Sustainability. His research at USF focuses on sustainable cost-effective production of algae biomass based on the design of novel photobioreactors. Previously, Dr. Dogaris was involved in biomass-to-bioethanol projects at NTUA. He has authored several peer-reviewed articles and presented at national and international conferences.

George Philippidis, Ph.D.
Associate Professor, Sustainable Energy

Dr. Philippidis is a recognized leader in sustainable energy with over 20 years of a successful career directing strategic business units in both the private and public sectors. He started his energy career at the National Renewable Energy Laboratory (NREL) in Denver before moving to the private sector at Thermo Fisher Corporation in Boston. He then joined the Applied Research Center at Florida International University in Miami. At the Patel College of Global Sustainability Dr. Philippidis leads the development, scale-up, and commercialization of biomass and algae technologies for sustainable production of transportation fuels, renewable power, and bioproducts as part of a green global economy. He works closely with the private sector, venture capital firms, and equity investors to bring clean technologies to the market place. Dr. Philippidis holds a Ph.D. in Chemical Engineering from the University of Minnesota and an MBA from the University of Denver. He has authored numerous publications, has given several speeches and media interviews, and holds 11 patents in clean technologies.