Instructor
Dr. Pratap Pullammanappallil
(352) 294 6719
pcpratap@ufl.edu
Office hours: Wednesdays 10:00 AM -12:00 noon in 203 Rogers Hall or by appointment on zoom

Teaching Assistant/Peer Mentor/Supervised Teaching Student
None

Course Description
This course is to provide knowledge on the production of chemicals and materials from renewable resources. The course includes the fundamental principles and practical applications of bio-based products, biorefinery and materials and chemicals from biomass. 3 credits (Fall)

Course Pre-requisites/ Co-requisites
It is recommended that the students have a basic background in general chemistry and physics. The topics of this interdisciplinary course will take into consideration that students will be coming to the class from varied backgrounds. Proper background materials will be provided when needed.

Course Objectives
After taking this course, students will be able to:
- Understand an overview of status quo and future direction of the engineering bioproducts from renewable resources.
- Gain knowledge on the fundamental principles for biomass conversion processes.
- Understand practical applications from renewable biomass to materials, and chemicals.

Material and Supply Fees
None

Relation to Program Outcomes (ABET):

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Coverage*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics</td>
<td>High</td>
</tr>
<tr>
<td>2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors</td>
<td>Medium</td>
</tr>
</tbody>
</table>
3. An ability to communicate effectively with a range of audiences

4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions | Medium

7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies | Medium

*Coverage is given as high, medium, or low. An empty box indicates that this outcome is not covered or assessed in the course.

**Required Textbooks and Software**
None

**Recommended Reading**

- Title: Biorenewable Resources – Engineering New Products from Agriculture
  Authors: Robert C. Brown and Tristan R. Brown
  Edition: 2 e
  Publisher: John Wiley, 2014
  ISBN: 978-1-118-52495-4

- Title: Biomass as a Sustainable Energy Source from the Future: Fundamentals of Conversion Processes
  Authors: Wiebren de Jong & J. Ruud van Ommen
  Publication date: 2014
  Edition: First edition
  ISBN: 978-1-118-30491-4
  Publisher(s): John Wiley & Sons, Inc.,

- Title: Principles of Polymer Systems
  Authors: Ferdinand Rodriguez, Claude Cohen, Christopher K. Ober, and Lynder A. Archer
  Publication date: 1996
  Edition: fifth editions
  ISBN: 1-56032-939-4
  Publisher(s): Taylor & Francis Books. Inc.
Course Schedule

Week 1: Biorefinery and biobased products overview
Week 2: Fundamental Concepts in Engineering Thermodynamics
Week 3: Biorenewable Resource Base
Weeks 4 and 5: Biomass properties, characterization, and compositions
Weeks 6, 7 and 8: Basic Principles of biomass conversion and processing
Weeks 9, 10 and 11: Biobased materials
Week 12: Materials and chemicals from renewable resources
Week 13: Life Cycle Analysis
Week 14: Environmental Impacts of biobased economy
Week 15: Biorenewable Policy

Attendance Policy, Class Expectations and Make-Up Policy
Attendance at lectures is expected. Attendance at office hours and review sessions is optional. Homework is due within one week of when assigned.
Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. Click here to read the university attendance policies:
https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/

Evaluation of Grades
Homework 250 points
Exam # 1 200/100 points
Exam # 2 200/100 points
Exam # 3 200/100 points
Total 750 points (two highest exam grades will be doubled)

Grading policy (Tentative and subject to change)

<table>
<thead>
<tr>
<th>Percent</th>
<th>Grade</th>
<th>Grade Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>93.0 - 100</td>
<td>A</td>
<td>4.00</td>
</tr>
<tr>
<td>90.0 – 92.9</td>
<td>A-</td>
<td>3.67</td>
</tr>
<tr>
<td>85.0 - 89.9</td>
<td>B+</td>
<td>3.33</td>
</tr>
<tr>
<td>80.0 - 84.9</td>
<td>B</td>
<td>3.00</td>
</tr>
<tr>
<td>75.0 - 79.9</td>
<td>B-</td>
<td>2.67</td>
</tr>
<tr>
<td>70.0 - 74.9</td>
<td>C+</td>
<td>2.33</td>
</tr>
<tr>
<td>65.0 - 69.9</td>
<td>C</td>
<td>2.00</td>
</tr>
<tr>
<td>60.0 - 64.9</td>
<td>C-</td>
<td>1.67</td>
</tr>
<tr>
<td>55.0 - 59.9</td>
<td>D+</td>
<td>1.33</td>
</tr>
<tr>
<td>50.0 - 54.9</td>
<td>D</td>
<td>1.00</td>
</tr>
<tr>
<td>45.0 - 49.9</td>
<td>D-</td>
<td>0.67</td>
</tr>
<tr>
<td>0 – 44.9</td>
<td>E</td>
<td>0.00</td>
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</tbody>
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More information on UF grading policy may be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx
Students Requiring Accommodations
Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting https://disability.ufl.edu/students/get-started/. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation
Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

In-Class Recording
Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

University Honesty Policy
UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (https://sccr.dso.ufl.edu/process/student-conduct-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions.
Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

**Commitment to a Safe and Inclusive Learning Environment**

The Herbert Wertheim College of Engineering values varied perspectives and lived experiences within our community and is committed to supporting the University’s core values, including the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information, and veteran status.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- HWCOE Human Resources, 352-392-0904, student-support-hr@eng.ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

**Software Use**

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

**Student Privacy**

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: [https://registrar.ufl.edu/ferpa.html](https://registrar.ufl.edu/ferpa.html)

**Campus Resources:**

**Health and Wellness**

**U Matter, We Care:**
Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

**Counseling and Wellness Center:** [https://counseling.ufl.edu](https://counseling.ufl.edu), and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

**Sexual Discrimination, Harassment, Assault, or Violence**
If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

**Sexual Assault Recovery Services (SARS)**
Student Health Care Center, 392-1161.

**University Police Department** at 392-1111 (or 9-1-1 for emergencies), or http://www.police.ufl.edu/.

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**Academic Resources**

**E-learning technical support**, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.
https://lss.at.ufl.edu/help.shtml.


**Library Support**, http://cms.uflib.ufl.edu/ask. Various ways to receive assistance with respect to using the libraries or finding resources.

**Teaching Center**, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. https://teachingcenter.ufl.edu/.

