

Biomaterials and Packaging - BIOP

Courses

BIOP 2120 FRONTIERS FOR SUSTAINABLE BIOMATERIALS (3) LEC. 3. Introduction to the sustainability of biomaterials and resource efficiency to produce materials, food, energy and services, that decrease society's dependency on fossil fuels.

BIOP 2140 FUNDAMENTALS OF PACKAGING TECHNOLOGY (3) LEC. 3. An introduction into basic concepts and theories of packaging design, manufacturing, characterization, and development. The packaging materials covered in this course include paper and paperboard, metal, and plastics.

BIOP 3390 INTRODUCTION TO FOREST PRODUCTS AND PACKAGING (3) LEC. 3. LAB. 2. Basic properties of wood and their impact on the manufacture of forest products. Identification of important products and woods.

BIOP 3391 FOREST AND MANUFACTURING OPERATIONS (1) LEC. .5. LAB. 2. Introduction to basic field operations in Forestry including site preparation and planting, harvesting and primary manufacturing processes relative to specific geographic locations.

BIOP 4060 ECONOMICS OF SUSTAINABLE BIOMATERIALS AND PACKAGING (3) LEC. 3. Pr. ECON 2020. The course will familiarize students with the economic theory of resource allocation in a market economy as applied to the specific sustainable biomaterials and packaging industry. This will include; production and consumption theory, engineering and financial decision making.

BIOP 4080 BUSINESS MANAGEMENT FOR SUSTAINABLE BIOMATERIALS (3) LEC. 3. Introduction to key forest products and sustainable biomaterials business management topics including supply chain management policies and limitations specific to the forest products, sustainable biomaterials and packaging industry.

BIOP 4360 SUSTAINABLE BIOMATERIALS TRADE AND MARKETING (3) LEC. 3. Covers the general structure of the sustainable bioproducts/biomaterials industry and the major product markets. Students will be provided an overview of structure of both traditional forest products as well as emerging sustainable biomaterial industry segments.

BIOP 4400 SUSTAINABLE BIOMATERIALS & PRODUCT DEVELOPMENT I (2) LEC. 2. Examines the initial stages of product development, providing a blend of economics, engineering, marketing, and sustainability to design a product that meets the needs of a chosen/participating customer.

BIOP 4410 SUSTAINABLE BIOMATERIALS & PRODUCT DEVELOPMENT II (2) LAB. 2. Pr. BIOP 4400. Continues and completes the final stages of product development (initiated in BIOP 4400), providing a blend of economics, engineering, marketing, and sustainability to finalize the product design that meets the needs of a chosen/participating customer.

BIOP 4840 LIFE CYCLE ASSESSMENT FOR SUSTAINABLE BIOMATERIALS (3) LEC. 3. Examines the performance and durability of products and packaging, including sustainability of raw materials and society energy needs, the use of sustainable materials to meet these needs and reduce impact on environment, and associated methods.

BIOP 5050 BIOMASS PROCESSING CHEMISTRY (3) LEC. 3. Wood and fiber morphology, cellulose, hemicellulose and lignin chemistry; biodegradations of cellulose, hemicellulose and lignin. Emphasis on bioenergy and bio-products.

BIOP 5070 PERFORMANCE AND DURABILITY OF PRODUCTS AND PACKAGING (3) LEC. 3. Examines the performance and durability of products and packaging, including physics and mechanics properties of solid wood and wood- and bio-based products and packaging materials, as well as notions about durability, thermal, electric and acoustic properties.

BIOP 5250 WOOD COMPOSITES FOR BIOMATERIALS & PACKAGING (3) LEC. 3. Pr. BIOP 3390. Relationships between various biomass feedstock properties and the physical, chemical, and mechanical properties of the biocomposite from various manufacturing processes.

BIOP 5800 BIOPOLYMERS FOR SUSTAINABLE BIOMATERIALS AND PACKAGING (3) LEC. 3. Students will learn packaging functions, classification, and regulations; polymers classification and properties; as well as engineering principles applied to biomaterials and packaging materials. Thermo-mechanical properties and polymers processing methods of natural and sustainable biomaterials will be discussed. An understanding of the advantages and limitations/challenges of bio-based polymers for packaging systems will be gained through the course.

BIOP 6050 BIOMASS PROCESSING CHEMISTRY (3) LEC. 3. Wood and fiber morphology, cellulose, hemicellulose and lignin chemistry; biodegradations of cellulose, hemicellulose and lignin. Emphasis on bio-energy and bio-products.

BIOP 6070 PERFORMANCE AND DURABILITY OF PRODUCTS AND PACKAGING (3) LEC. 3. Examines the performance and durability of products and packaging, including physics and mechanics properties of solid wood and wood- and bio-based products and packaging materials, as well as notions about durability, thermal, electric and acoustic properties.

BIOP 6250 BIOCOMPOSITES (3) LEC. 3. Relationships between various biomass feedstock properties and the physical, chemical, and mechanical properties of the biocomposite from various manufacturing processes.

BIOP 6800 BIOPOLYMERS FOR SUSTAINABLE BIOMATERIALS AND PACKAGING (3) LEC. 3. Students will learn packaging functions, classification, and regulations; polymers classification and properties; as well as engineering principles applied to biomaterials and packaging materials. Thermo-mechanical properties and polymers processing methods of natural and sustainable biomaterials will be discussed. An understanding of the advantages and limitations/challenges of bio-based polymers for packaging systems will be gained through the course.