

Forest Business & Community Services







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For over a century, the University of Maine has provided research, development and commercialization services to forest-focused businesses and communities in Maine and beyond.

With every new need and technology advancement, the university continually strives to update and adapt our capabilities to deliver state-of-the-art solutions which support the competitive challenges of a global economy. Our extensive network of forest professionals are dedicated to delivering science-based solutions and training across the sustainable forest management supply chain and deliver new and innovative products.

Our services include:

Forest Management

Forest Products

Forest Business & Community



Forest Management

Silviculture and Forest Operations

Since the establishment of the Maine Agricultural and Forest Experiment Station in 1887, the university and our collaborative partners have expanded our experimental forest network to over 14,000-acres across multiple stand types, providing our researchers a living laboratory to unravel the complex variables which influence forest growth and health, invasive and native pest control, harvesting techniques and practices, soil preservation, wildlife habitat and carbon dynamics.

Examples of our forest management services include

- A multi-zoned 3,900-acre research forest owned by the university and co-operated with the U.S. Forest Service which provides over 60 years of silvicultural and ecological results across diverse management prescriptions
- Over 60 active field sites on university and industry partner locations across Maine and New Brunswick to gather real-world data on forest regeneration, wildlife behavior, soil productivity and commercial thinning
- A highly-instrumented forest ecosystem site operated in collaborative partnership with Ameriflux. There, we monitor the carbon storage and uptake dynamics of our forests and assess how climate variability impacts forest-carbon behaviors
- Operation of an active stakeholder-driven research cooperative for more than four decades that delivers timely, focused solutions to challenges faced by forest professionals
- Research, analysis and training of modern harvesting operations, silvicultural practices and forest planning to assist clients in developing and implementing sustainable best management practices

Forest Informatics

Modern advancements in technology and connectivity have changed the way forest stewards manage their lands. The University of Maine combines the history of proven field studies with these advanced state-of-the-art forest monitoring and analysis tools, aerial mapping technologies and geospatial systems to provide modern forest professionals an unprecedented level of detail on the health and status of their forest lands.





Examples of our forest informatics services include

- Advanced satellite, aerial and UAV forest mapping technologies including visual infrared data, multi-spectral and photogrammetric imagery
- Spatial data collection and analysis of forest systems and land use dynamics for forest professionals, government agencies, community planners and development groups
- Sophisticated machine learning algorithms that combine geospatial and plot data to generate detailed information on forest attributes and estimation, habitat mapping and forest health monitoring
- Training of forest-focused professionals on the use and analysis of modern informatic technologies and applications

Forest Products

Pulp and Paper

For over 80 years, the University of Maine has offered a unique, open-access research experience where scientists, entrepreneurs and industry leaders work collaboratively to develop new pulp- and paper-based products and manufacturing processes. We provide science-based solutions and cutting-edge research expertise that allow our clients agile response to consumer preferences and trends. From benchtop analytical experimentation to production rate pilot trials, the University of Maine delivers full in-house processing, development and testing solutions.

Examples of our pulp and paper services include

- Complete chipping, digester, refiner and reactor operations
- Chemical and mechanical pulping capabilities from wood chips or recycle streams
- A full pilot-scale fourdrinier paper machine including flexible coating systems, precision drives, modern distributed controls, online scanning and calendaring equipment
- A variety of pilot and high-speeds coater systems and calendaring equipment
- Complete testing capabilities across all stages of the paper process, from raw materials and pulp characterization through fiber quality, chemical analysis and finished goods performance
- Patented cellulosic nanofibril manufacturing capabilities allowing material property tailoring at a production rate up to one ton per day

Wood and Wood Composites

The University of Maine offers significant expertise across a variety of wood and wood-based composites. Rapid expansion of our capabilities to manufacture and analyze products over the past two decades has increased the breadth and scope of services offered through our world-class manufacturing and commercialization facilities. With capabilities in a variety of conventional and emerging wood-based composites technologies, our facilities provide unique opportunities for product improvement, new product development and product validation.

By working collaboratively with our experts, the University of Maine rapidly delivers accurate and effective results to solve our clients' wood and wood-based composite challenges.



Examples of our wood and wood-based composite services include

- Log conditioning and reduction systems which replicate production-scale processes
- Continuous furnish screening and drying processes which rapidly segment and generate desired wood characteristics
- Flexible spinning disk atomizing resin blenders which enable the evaluation of multiple resins and additive systems with precise control of loading and distribution
- Computer-controlled platen press systems which provide steam, electric and/or oil heated panel manufacturing of finished samples up to four by eight feet (1.2m X 2.4m)
- Dehumidification kiln and conditioning chamber systems which provide uniform moisture control of furnish, testing materials, and finished goods
- Our ISO 17025 accredited-testing laboratory offers an extensive list of validated material and performance evaluations to determine the complete performance characteristics of our clients' products, from micro- through macro-and large-scale assemblies

Forest Products

Emerging Technologies

The University of Maine continually adopts technological advances in material science and product applications to provide our government and industrial clients cutting-edge manufacturing services from benchtop through pilot-scale. Our full suite of testing and analysis capabilities keep examinations of new products and formulations in-house, providing our clients a one-stop shop for their development needs.

Examples of our emerging technology services include

- A full range of additive manufacturing capabilities to develop forest-based 3D polymer structures and assemblies quickly and effectively at end-use scale
- Forest-based biopolymers, bio-coatings and fiber-filled thermoplastic composites offering greener alternatives to traditional polymers
- Manufacturing, design, and evaluation of a variety of both structural and non-structural engineered wood composite products, including panel products, wood fiber insulation, structural composite lumber, and mass timber to create innovative panel systems at scale, optimize system assemblies and establish performance traits
- A complete biochemical and thermochemical biorefinery facility which generates forest-based biochemicals and biofuels from forest residues and wood waste, offering petrochemical replacements for a myriad of products
- In-house and collaboratively developed nanocellulose applications across a broad range of innovative end uses which allow for greener renewable product substitution in a variety of consumer goods
- Forest-based biomedical applications offering innovative and novel solutions to challenges in healthcare and patient treatment

Testing and Analysis

Our research and commercialization infrastructure requires a diverse range of testing and analysis capabilities that are essential to evaluating and understanding the performance of new and innovative products. The University of Maine continually updates and expands these testing capacities to provide quick and precise evaluations to our clients.

Examples of our testing and analysis services include

- ISO 17025 accredited testing of wood and wood-based composite materials
- The only ALSC/PFI certified pellet testing laboratory in the Northeastern U.S.
- Micro- through large-scale static and cyclic mechanical testing capabilities, including modular multi-axis reactive testing of full-scale components and structures





- A full suite of thermal, chromatographic, microscopic and spectroscopic analysis technologies
- Complete testing services for all aspects of pulp, paper, coatings and wet chemistry
- Certified clean room facilities with state-of-the-art surface analysis equipment
- An array of environmental testing and accelerated weathering systems to quickly and repeatedly simulate a variety of outdoor and harsh environmental conditions

Engineering and Manufacturing Services

The University of Maine provides a broad range of in-house engineering and manufacturing solutions to meet the needs of our forest manufacturing clients. From design, analysis and optimization through manufacturing turn-key production systems, the university serves as a partner to increase client productivity, modernize processes and reduce manufacturing variability.

Examples of our engineering and manufacturing services include

- Product, process and formulation research, development and optimization
- Design, manufacture and analysis of prototypes and pilot-scale short-run products
- Reverse engineering and comparative product evaluation
- Automation and turn-key systems design and integration
- Modern computer modeling and design, finite and stress analysis and rapid prototyping

Forest Business & Community

Beyond facilitating access to our suite of research forests and facilities, the University of Maine provides a range of services to forest-focused businesses and communities. Our staff and cooperative partners provide support the economic and development growth of our clients—both in communities reliant on sustainable forests and throughout the forest supply chain.

Examples of our business and community services include

- Connecting clients with our extensive network of professional business and development collaborators to increase opportunities for growth
- Assistance in sourcing and developing grants and funding opportunities
- Business coaching, intern placement and development for established businesses
- Start-up services to new and aspiring businesses, including incubation, entrepreneur mentoring, innovation training and business plan development
- Evaluation of supply chains, infrastructure, economic policy, sector markets and socio-economic indicators to assist in developing business strategies and define new opportunities
- Defining, developing and expanding forest-focused opportunities including nature-based tourism, outdoor recreation and non-timber forest products
- Workforce analysis and training to meet the needs of employers and communities
- Economic development and community diversification to increase resilience to changing markets and demands



UNIVERSITY OF MAINE FOREST ECONOMY SERVICE PROVIDERS

To learn more about our forest-focused services contact:

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Alphabetical list of forest economy service providers:

Advanced Manufacturing Center
207.581.2713 | umaine.edu/amc

Advanced Structures and Composites Center
207.581.2123 | composites.umaine.edu

Center for Research on Sustainable Forests
207.581.3794 | crsf.umaine.edu

Cooperative Forestry Research Unit
207.581.2893 | umaine.edu/cfru

Chemical and Biomedical Engineering
207.581.2277 | umaine.edu/chb

Forest Bioproducts Research Institute
207.581.1489 | forestbioproducts.umaine.edu

Maine Agricultural and Forest Experiment Station
207.581.3202 | umaine.edu/mafes

Margaret Chase Smith Policy Center
207.581.1648 | mcspolicycenter.umaine.edu

Mitchell Center for Sustainability Solutions
207.581.3195 | umaine.edu/mitchellcenter

Paper Surface Science Program
207.581.2277 | umaine.edu/chb

Process Development Center
207.581.2237 | umaine.edu/pdc

School of Forest Resources
207.581.2841 | forest.umaine.edu

Office of Strategic Partnerships, Innovation, Resources and Engagement
207.581.2201 | umaine.edu/inspire

Wildlife, Fisheries, and Conservation Biology
207.581.2862 | umaine.edu/wlc



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