DEGREE REQUIREMENTS

The master of science degree requires the successful completion of 34 credit hours, including formal course work, presentation of a graduate thesis seminar, and preparation and oral defense of a thesis. The thesis involves the completion of original research of publishable quality.

The student's thesis research and program of study reflect the emphasis of the option. All thesis research is conducted under the direction of an adviser and an advisory committee. The advisory committee is composed of at least three members: two from the department (including the adviser) and one from another academic unit.

DOCTOR OF PHILOSOPHY DEGREE PROGRAM

The doctor of philosophy degree is offered for students who want to carry out advanced research in the biological sciences. A student's research can encompass any area represented by a faculty member. The objective is to prepare the student at the highest academic level for a productive career in research, teaching, and/or administration.

ADMISSION REQUIREMENTS

A doctoral applicant must have a bachelor's or master's degree. For admission, a student should have a superior academic record, with a minimum of 3.0 (on a scale of 4.0) in undergraduate work or 3.2 in graduate work, and should have a superior academic record, with a minimum of 3.0 (on a scale of 4.0) in undergraduate work or 3.2 in graduate work. Three letters of recommendation and scores on the Graduate Record Examination (General Test only), three letters of recommendation and a statement of objectives are required. Admission decisions for fall semester enrollment are made by March 1, and for spring semester enrollment by October 1.

DEGREE REQUIREMENTS

The doctor of philosophy degree requires the successful completion of 79 credits beyond the bachelor's level, including formal course work, presentation of a dissertation, seminar, and preparation and oral defense of a dissertation. The dissertation involves the completion of original research of publishable quality.

The student's thesis research and program of study reflect the emphasis of the option. All thesis research is conducted under the direction of an adviser and an advisory committee. The advisory committee is composed of at least five members: four faculty members (including the adviser) from the department and one faculty member from another academic unit.

The proposal represents the research plan that the student will pursue for the dissertation. It should be written under the close supervision of the adviser, and the proposal must be presented to and approved by the advisory committee.

Doctoral research represents a significant contribution to the knowledge of a particular problem. A student must be prepared to devote considerable time and effort to research. With the adviser’s approval, the student presents the preliminary copies of the dissertation to the advisory committee for critical evaluation. Once the dissertation satisfies the advisory committee, the student then orally defends the work. If the defense is satisfactory, the advisory committee will approve the dissertation once the final revisions are completed.

Prior to graduation, the student must present a dissertation seminar to the faculty and graduate students.
RESEARCH ACTIVITIES AND FACILITIES
The department faculty are conducting research in the following general areas:

Biochemistry, Molecular Biology and Molecular Genetics
A variety of molecular and biochemical approaches are used in the department to answer questions related to regulation of cell duplication, signal transduction in early development, circadian rhythms and sensory systems, microbial pathogenesis, plant growth, and the assembly of subcellular structures. A major effort is underway to develop novel cell culture systems for production of synchronously growing populations of human cells. Intracellular complexes of DNA and protein are under study to elucidate the regulatory mechanisms that trigger DNA replication and cell division in bacteria. The role of signal transduction pathways induced by calcium in the fertilization step of embryogenesis is another active area of research. Drug discovery efforts are focused on the genetics of the polyketide synthesis pathway in a variety of uncharacterized microorganisms collected from extreme environments. Development and analysis of new bacterial growth inhibitors is also underway for Mycobacterium, Escherichia coli and other important bacterial pathogens. Another expanding research area is the neurophysiological and molecular analysis of photoreceptors, particularly the infrared receptors in snakes. The diversity of biochemical and molecular research conducted by members of the biological sciences department provides for a rich and interactive environment for graduate students.

Marine Biology
The marine biology faculty maintain active research programs in finfish, crustacean, molluscan, coral and echinoderm biology. The evolution and ecological physiology of organismal design are investigated using high-speed videography, electromyography, and biomechanical and ecomorphological analysis of feeding in field-caught and laboratory-reared fish. Fisheries research includes analyses of early-life history and recruitment patterns of estuarine-dependent sport fish species. Crustacean research centers on the ecology and physiology of adult and early-life history stages, especially the migratory behavior of spawning female crabs and the recruitment and habitat selection of post larvae. Research on suspension-feeding invertebrates examines the mechanisms responsible for food capture, selection and processing. Remote sensing, as well as laboratory and field investigations of corals, explores the effects of global-climate change on coral reefs. Studies of echinoderms have concentrated on their reproduction, anatomy, systems and ecology by using physiological, histological, morphological and field techniques. Aquaculture programs are investigating the reproductive and feeding biology of ornamental shellfish and finfish species.

Molecular Marine Biology
Collaborative research among diverse faculty and students enables the application of molecular biological techniques to marine biology topics such as genetic identification of fishery and manatee populations, biochemistry of molluscan shell growth, response of marine organisms to anthropogenic pollutants, genetic engineering in aquaculture and the relationship of enzymes to rates of calcification and skeletogenesis in commercially significant marine organisms.

Plant Physiology and Plant Tissue Culture
Studies are conducted on the initiation of in vitro plant cultures of various plant species, and on the changes that accompany in vitro differentiation. Research on the identity of genes that are specific to particular stages of differentiation, and attempts to propagate rare species with tissue culture techniques, are in progress.

Ecology and Conservation Biology
Research activities include studies of coral reef ecology, paleobotany, biogeography, biodiversity, freshwater and marine aquaculture, fisheries ecology, population ecology of marine mammals, ecomorphology and the life history and ecology of selected crustaceans and echinoderm species. Study locations range from local to international, including the Indian River Lagoon, sites along the Atlantic seaboard and offshore from New Jersey to Florida, the Bahamas and Amazonia.

FINANCIAL AID
Graduate student assistantships for instruction and research are available to well-qualified master’s and doctoral degree students. Assistantships carry stipends plus a tuition waiver. In some cases, a tuition waiver alone may be awarded for a limited amount of service. Assistantships for master’s degree students are normally for an academic year; assistantships for doctoral students are renewable on a yearly basis.

THE UNIVERSITY
Florida Institute of Technology is a distinctive, independent university, founded in 1958 by a group of scientists and engineers to fulfill the need for specialized, advanced educational opportunities of Florida’s Space Coast. Florida Tech is the only comprehensive, independent scientific and technological university in the southeast. Supported by both industry and the community, Florida Tech is the recipient of many research grants and contracts, a number of which provide financial support for graduate students.

LOCATION
Melbourne is located on the central east coast of Florida. The area offers a delightful year-round subtropical climate and is 10 minutes from the ocean and beaches. Kennedy Space Center and the massive NASA complex are just 45 minutes north of Melbourne. The city of Orlando, Walt Disney World, EPCOT and many other attractions are one hour west of Florida Tech’s main campus.

FOR MORE INFORMATION
To obtain more detailed information about this Graduate Program or to obtain application materials, visit our home page at www.fit.edu/grad or the University Catalog at www.fit.edu/catalog, or contact:
Florida Institute of Technology
Office of Graduate Admissions
150 W. University Blvd.
Melbourne, FL 32901-6975
(321) 674-8027
(321) 723-9468/Fax
(800) 344-4348

Florida Institute of Technology is an independent university located in Melbourne, Florida. Florida Tech is accredited by the Southern Association of Colleges and Schools. Florida Tech admits students of any race, color, national or ethnic origin, and does not discriminate on the basis of disability in admission or access to its programs.