

Master of Science Electronics and Computer Technology

The master of science in electronics and computer technology is a 32-semester-hour (minimum) program that includes a focus, or concentration, in instrumentation, systems, and automation. Graduates qualify for technical, leadership, and management positions in a variety of areas, including systems integrator, systems design and development, and project management.

This rigorous and individualized program accommodates the previous experiences, education, and interests of each degree candidate. The curriculum sequence includes three program phases:

- Content Component
- Application Component
- Integration Component

This program can be completed in two years of full-time study. Students also have the option of part-time study.

Delivery: Internet (Some courses in this program include DVD supplements)

On-campus requirements: None

Access: In-state and out-of-state students can access all courses in this program.

Courses

Content Component

ECT 537 Industrial Computer Systems Management (3 hours)

ECT 542 Electronic Control Systems (3 hours)

ECT 631 Local Area Networks (3 hours)

ECT 634 Computer Based Automated Systems Integration (3 hours)

ECT 642 Microcomputer Based Process Control Technology (3 hours)

ECT 679 Problems in Electronics and Computer Technology (2-3 hours)

ECT 698 Research in Electronics and Computer Technology (3 hours)

MCT 571 Production Planning and Control I (or approved substitute) (3 hours)

MCT 573 Quality Control of Industrial Products I (or approved substitute) (3 hours)

Application Component

ECT 697 Major Project (6 hours) or

ECT 699 Master's Thesis (6 hours)

Integration Component

ECT 680 Seminar: Analysis of Technical Systems (3 hours)

Admission Requirements

Applicants must apply for and meet the minimum requirements for admission to Indiana State University. (Refer to the enclosed *Graduate Admissions* insert.) In addition, individuals must have no deficiencies in the area. Undergraduate deficiency courses may be taken to fulfill any requirements. The GRE (Graduate Record Examination) is **not** required.

Academic Advisor

Dr. Gerald W. Cockrell, coordinator

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Master of Science— Electronics and Computer Technology

Course Delivery

Courses in this program are delivered via the Internet. Some courses include DVD supplements. Students must have high-speed (broadband) Internet connection (for example, Ethernet, DSL, cable, satellite, or high-speed wireless). For details, see *Delivery* insert.

ECT 537 Industrial Computer Systems Management

(3 hours): Evaluation of control computers in an industrial environment, the direct and indirect cost trade-off of implementing a hardwired versus a programmed controller. The effect of management decisions on industrial computer applications. Economics of open and closed systems, software versus hardware, in-house versus contract maintenance, and multi-vendor versus single vendor systems. (Graduate students must do related investigation and prepare a report at a level beyond the routine detail of the course.)

ECT 542 Electronic Control Systems (3 hours): Procedures for the design and analysis of modern control systems used in manufacturing and production processes; as applied through digital, analog, and electro-mechanical sensors. (Graduate students must do related investigation and prepare a report at a level beyond the routine detail of the course.)

ECT 631 Local Area Networks (3 hours): Introduction to Local Area Networks (LAN's), focusing on both historical and emerging technologies with emphasis on the OSI reference model, IEEE802 standards, and the TCP/IP protocol. Need analysis, design, and implementation of new and upgrading LAN projects.

ECT 634 Computer Based Automated Systems Integration (3 hours): A study of the theory, design, and application of computer interfacing techniques for use in integrating automated manufacturing systems. Emphasis on computer interfacing including hardware and software will constitute a major portion of the course. Methods and procedures employed in the integration of complete automated industrial systems will be presented. Laboratory experiences will help complement all theoretical concepts presented in this course.

ECT 642 Microcomputer Based Process Control Technology (3 hours): An in-depth study of the theory, design, and application of microcomputer systems as applied to process control technology. Emphasis on interfacing various sensors and peripheral devices to microcomputer systems will constitute a major portion of the course. Laboratory experiences will help complement all theoretical aspects of the field covered in this course. Prerequisite: 542

ECT 679 Problems in Electronics and Computer Technology (2-3 hours): Content determined to large extent by the interest and needs of each individual enrolled for the course.

ECT 680 Seminar: Analysis of Technical Systems (3 hours): This course is a culminating experience where previously acquired concepts, knowledge, skills, attitudes, and values will be necessary for proper synthesis and evaluation of problems, issues, and concerns related to selected applications in electronics or computer technology.

ECT 697 Major Project (6 hours): The student will be involved in research, applied or theoretical, using standard procedures of problem identification, possible solutions, and a final report. This experience can be field and/or laboratory based in electronics and computer technology.

ECT 698 Research in Electronics and Computer Technology (3 hours): This course is offered to help students achieve increased levels of competence for the interpretation, utilization, or preparation and development of research information. Special emphasis will be provided for applying previously learned knowledge, skills, or attitudes about electronics and computer technology to find and evaluate plausible solutions to problems in business and industry.

ECT 699 Master's Thesis (6 hours): By arrangement with chairperson of student's thesis committee.

MCT 571 Production Planning and Control I (3 hours): Principles of planning, scheduling, routing, and developing procedures of production control.

MCT 573 Quality Control of Industrial Products I (3 hours): Basic principles and practices of quality control in industry.



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University**

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Distance Learning

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Graduate Admission

Individuals who wish to complete a distance course or program must apply for admission to Indiana State University.

Degree-Seeking Students

Individuals seeking graduate degrees (master's and doctoral) must meet admission requirements (on reverse). To be considered for admission, you must submit all application credentials, including a completed *Degree-Seeking Application*, and pay the application fee. For instructions (and on-line application) visit Distance Learning at www.indstate.edu/distance/admission-grad

Unclassified Graduate Students

Individuals must submit a *Non-Degree Application* if they wish to complete:

- An ISU certificate program
- An ISU licensure or licensure renewal program
- A limited number of courses for credit
- A limited number of courses for transfer to another institution
- A graduate course as an ISU senior

To be considered for admission, students must possess an undergraduate degree from a regionally accredited institution and meet any and all requirements of the academic unit offering the chosen program. For instructions (and on-line application), visit www.indstate.edu/distance/admission-grad

International Students

International applicants who wish to complete a distance program or degree must complete and submit the *International Student Application for Admission*. For instructions (and on-line application) visit the School of Graduate Studies www.indstate.edu/sogs

School of Graduate Studies

Call toll-free: 1-800-444-GRAD

E-mail grdstudy@isugw.indstate.edu

Apply on-line: www.indstate.edu/sogs

Application Fee: \$35.00 (nonrefundable)

Admission Requirements

It must not be assumed that meeting the minimal standards (listed below) guarantees admission to the program.

Admission requirements for master degree programs:

- Hold a baccalaureate degree granted by a regionally accredited institution (for international students, a degree granted by a recognized institution).
- Have earned a minimum cumulative grade point average of 2.7 in all undergraduate course work; or have earned a minimum cumulative grade point average of 3.0 in the last 60 hours of undergraduate course work; or have earned a minimum cumulative grade point average of 3.0 in the applicant's major field of study; or have earned a minimum cumulative grade point average of 3.0 in all courses taken at the graduate level.
- Where required, submit departmentally acceptable scores on the General Test of the Graduate Record Examination (GRE) or, where applicable, other appropriate standardized measures.
- Satisfy and/or meet any and all additional admission requirements of the department/program where admission is being sought.
- Submit to the School of Graduate Studies a fully completed Graduate Admission Application Form with a non-refundable admission application fee of \$35.00 payable by cash, credit card, money order, or check made payable to Indiana State University.

Note: The requirements (above) are for *regular* admission status. For *conditional* and *provisional* admission requirements, refer to the *Graduate Catalog* at www.indstate.edu/sogs

Admission requirements for doctoral programs:

- Hold a master's degree granted from a regionally accredited institution (for international students, a degree granted by a recognized institution), unless applying to a department/program that accepts students with undergraduate degrees. In the latter case, an applicant must, at a minimum, meet the regular admission requirements for a master's candidate (see *Admission to Master's Degree programs*).
- Have earned a minimum cumulative grade point average of 3.2 in all courses taken at the graduate level.
- Where required, submit departmentally acceptable scores on the General Test of the Graduate Record Examination (GRE) or, where applicable, other appropriate standardized measures.
- Satisfy and/or meet any and all additional admission requirements of the department/program where admission is being sought.
- Submit to the School of Graduate Studies a fully completed Graduate Admission Application Form with a non-refundable admission application fee of \$35.00 payable by cash, credit card, money order, or check made payable to Indiana State University.