Master of Science in Engineering or Technology (International Program)

Curriculum Title

Master of Science in Engineering or Technology

Degree Title

Master of Science in Engineering or Master of Science in Technology

Admission Requirements

- Bachelor degree in engineering or science from institutions approved by the SIIT Executive Committee.
- Overall cumulative GPA of at least 2.75 with research experience, or overall cumulative GPA of at least 3.00, or top 20% of the class.
- Two letters of recommendations.
- The applicant must submit an official score of one of the following English language tests:
  - TU-GET,
  - TOEFL (official or institutional),
  - IELTS, or
  - an English test conducted by SIIT.

  The score must not be older than two years from the date on which it was issued to the date of the application for admission to the program.
- Approval of the admission by the SIIT Executive Committee.

Graduation Requirements

A candidate for a master of science in engineering or technology program must successfully complete 39 credits and meet other requirements as follows:

1. Twelve credits of taught courses (see the course descriptions) with a GPA of at least 3.00 or equivalent.
2. Twenty seven credits of thesis.
3. At least one paper on thesis results must have been accepted for publication in a reputable international journal approved by the Academic Review Committee. The following alternate requirements may be used: one paper in a national journal approved by the Academic Review Committee and one paper in a refereed international conference. To graduate, one paper must have been accepted and the other must have been submitted.
4. Approval of the thesis by an external examiner appointed by the SIIT Executive Committee.
5. Satisfying one of the following English proficiency requirements: TOEFL (official or institutional) not less than **550** marks (or **213** marks for computer-based test or **79** marks for Internet-based test), or IELTS not less than **6.0**, or pass the TU-GET with a score of at least **550**. Each student is expected to satisfy this English requirement within one year of enrolment.

Students with insufficient background may be required to take some basic courses and obtain satisfactory grades, as determined by the thesis committee.

Thesis Committee

The Thesis Committee consists of a) a faculty member of SIIT, who is the student's advisor, as the chairperson, b) two or more members, at least one of whom is a faculty member of SIIT, and c) a co-advisor if necessary. There must be at least one member who is not affiliated with SIIT.

Thesis Final Defense Committee

The Thesis Final Defense Committee consists of the same members as the Thesis Committee. However, the defense must be chaired by a thesis committee member who is not the advisor or co-advisor.

External Examiner

The external examiner must be appointed by the SIIT Executive Committee.

Period of Study

The maximum period of study to complete the program is 4 academic years.

Taught Courses

			Credits
ES801	Advanced Engineering Mathematics		3
	or ES811	Theory of Computation	3
	or ET600	Numerical Methods for Engineers	3
	or ICT600	Computational Mathematics	3
	or SE600	Decision Making and Optimization	3
ES802	Research Methodology		3
	or ES805	Research Methodology	2
	and		
	ES806	Research Seminar	1
ES803	Special Study		3
ES804	Selected Topic		3

Course Descriptions

ES801 Advanced Engineering Mathematics **3(3-0-9)**
Mathematics for solving engineering problems; ordinary differential equations of higher order; partial differential equations; integral equations; numerical analysis; optimization techniques.

ES802 Research Methodology **3(3-0-9)**
Concept of scientific and technological research; statistics for research planning and research study; data collection and data analysis; interpretations, conclusions and recommendations of research results.

ES803 Special Study **3(3-0-9)**
Each student is required to undertake an in-depth study of an approved topic which will lead to formulation of thesis proposal. The study will be supervised by a faculty member. A written report and oral presentation have to be given at the end of the semester to the student thesis committee.

ES804 Selected Topic **3(3-0-9)**
Each student is required to select an advanced engineering or technological course relevant to the student's thesis. The course may be offered by SIIT or any other reputable graduate school but has to be approved by the student thesis committee.

ES805 Research Methodology **2(2-0-6)**
Concept of scientific and technological research; statistics for research planning and research study; data collection and data analysis; interpretations, conclusions and recommendations of research results.

ES806 Research Seminar **1(0-3-1)**
Student-faculty interaction on advanced research topics.

ES811 Theory of Computation **3(3-0-9)**
Set theory; relations; formal proof methods; finite automata; regular expressions; context-free grammar; pushdown automata; Turing machines; uncomputability; computational complexity; first-order logic.

ES898 Master's Thesis **27 Credits**

ET600 Numerical Methods for Engineers 3(3-0-9)
Programming concepts and techniques; Modern programming languages and computational tools for engineering problems; Numerical methods as applied to practical engineering problems; Introduction to finite element methods.

ICT600 Computational Mathematics 3(3-0-9)
Set theory; relations; Formal proof methods; Finite automata; Regular expressions; Context-free grammar; Pushdown automata; First order logic; Theories related to counting, graphs and networks; Interplay between continuous models and their solution via discrete processes; Vector spaces, basis, dimension, eigenvalue problems, diagonalization, inner products, unitary matrices; Introduction to applied statistics and its application to intelligent systems; introduction to supervised statistical learning including discrimination methods.

SE600 Decision Making and Optimization 3(3-0-9)
Fundamental optimization tools for quantitative analysis to develop modeling and decision-making skill in management sciences; Linear programming; Integer programming; Nonlinear programming; Goal programming; Game theory; Markov chains; Queuing theory and decision analysis techniques; Advanced topics in optimization.