COURSE COUNSELING
(FOR YEARS 3 & 4 IN 2018-19)

Department of Information Engineering

April 12, 2018
OUTLINE

- IERG & MIEG Curricula
  - Major required & IE elective courses
- New IE courses
- IE courses offered in 2018-19
- IE Streams of Specialization
- Discussion on some courses
- Q&A
ENGG YEAR 1 MAJOR CORE

Semester 1

- MATH1510
  Calculus
- PHYS1110/1003
  Engineering Physics I
- ENGG1100
  Engineering Design Lab

Semester 2

- ENGG1410
  Engineering Mathematics I
- ENGG1110
  Problem Solving by Programming

One more Faculty Science Course:

Chemistry Courses: CHEM1380
Life Science Courses: LSCI1001, 1003
Physics Courses: PHYS1110, ENGG1310
Other Courses: CSCI1120, CSCI1130
IERG/MIEG YEAR 2 MAJOR REQUIRED

Semester 3
- ENG2420 (ENG2440)
  Complex Numbers, Differential Equations & Discrete Mathematics
- CSCI1140 (1 unit) (IERG2080)
  Programming Laboratory
- IERG2060
  Basic Analog and Digital Circuits
- MATH2010
  Advanced Calculus I
- MATH1050
  Foundations of Modern Mathematics

Semester 4
- ENG2470 (ENG2430)
  Probability & Statistics
- ENG2601 (2 units)
  Technology, Society and Engineering
- ENG2602 (1 unit)
  Engineering Practicum
- CSCI2100
  Data Structure
- IERG2051
  Signals and Systems
- MATH2020
  Advanced Calculus II

FACULTY
- IERG
- MIEG (additional)
IERG/MIEG YEAR 3 MAJOR REQUIRED

Semester 5

- ENGG2310
  Principles of Communication Systems
- IERG3820
  Communication Laboratory
- IERG3310
  Computer Networks
- IERG3800 (1 unit)
  Information Infrastructure Design Lab
- IERG3080
  Software Engineering and Practices
- MATH2050
  Algebraic Structures
- MATH2230
  Complex Variables with Applications

Semester 6

- IERG3060
  Microcontrollers and Embedded Systems
- IERG3810
  Microcontrollers and Embedded Systems Laboratory
- MATH2040
  Linear Algebra II

(IERG3060 & IERG3810 are elective courses for MIEG)
Two-semester Final Year Project (FYP)
Project selection in April for next academic year
Professor suggested topics
Student proposed topics
Poster presentations in December and May
MAJOR ELECTIVES

- IERG: at least 17 units
  - At least 12 units from IE Major Elective List
  - The rest (5 units) can be either from IE Major Elective List or from 3000-coded courses from all other programmes under Engineering Faculty

- MIEG: at least 9 units from the given MIEG major elective list:
  IE Major Electives, MATH2060, 3010, 3030, 3040, 3070, 3080, 3215, 3230, 3270, 3290, 4030
IE MAJOR ELECTIVES

CSCI 3150  Introduction to Operating Systems
ENGG 1820  Engineering Internship
IERG 3010  Digital Communications
IERG 3050  Simulation and Statistical Analysis
IERG 3280  Networks: Technology, Economics, and Social Interactions
IERG 3300  Introduction to Stochastic Processes
IERG 3320  Social Media and Human Information Interaction
IERG 3830  Product Design Project
IERG 4030  Optical Communications
IERG 4080  Building Scalable Internet-based Services
IERG 4090  Network Protocols and Systems
IERG 4100  Wireless Communication Systems
<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>IERG 4110</td>
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IE MAJOR ELECTIVES

IERG 5020  Telecommunication Switching and Network Systems
IERG 5040  Lightwave System Technologies
IERG 5090  Advanced Networking Protocols and Systems
IERG 5100  Advanced Wireless Communications
IERG 5130  Probabilistic Models and Inference Algorithms for Machine Learning
IERG 5140  Lightwave Networks
IERG 5154  Information Theory
IERG 5200  Channel Coding and Modulation
IERG 5230  Algorithms and Realization of Internet of Things Systems
IERG 5240  Applied Cryptography
IERG 5270  Advanced Topics in P2P Networks and Systems
IERG 5280  Mobile Networking
IERG 5290  Network Coding Theory
IERG 5300  Random Processes for Engineers
IERG 5310  Security & Privacy in Cyber Systems
IERG 5320  Digital Forensics
IERG 5330  Network Economics
IERG 5340  IT Innovation and Entrepreneurship
IERG 5590  Advances in Blockchains
Courses on Telecommunications and Information Processing

- **ENGG1410/2460/2430**
  - Engineering Math

- **IERG2051**
  - Signals and Systems

- **IERG2060**
  - Basic Analog and Digital Circuits

- **IERG3820**
  - Communication Laboratory

- **IERG3010**
  - Digital Communications

- **IERG3060**
  - Microcontrollers & Embedded Systems

- **IERG3050**
  - Simulation and Statistical Analysis

- **IERG3810**
  - Microcontrollers & Embedded Systems Lab

- **IERG3300**
  - Stochastic Process

- **IERG3830**
  - Product Development Project

- **IERG3280**
  - Networks: Technology, Economics & Social Interactions

- **IERG3810**
  - Communication Laboratory

- **IERG4020**
  - Telecommunication Switching and Network Systems

- **IERG4030**
  - Optical Communications

- **IERG4100**
  - Wireless Communication Systems

- **IERG4110**
  - Hands-on Wireless Communications

- **IERG4160**
  - Image and Video Processing

- **IERG4190**
  - Multimedia Coding and Processing

- **IERG4230**
  - Introduction to Internet of Things

- **IERG5200**
  - Channel Coding and Modulation

- **IERG5154**
  - Information Theory

- **IERG5290**
  - Network Coding Theory

- **IERG5040**
  - Lightwave System Technologies

- **IERG5140**
  - Lightwave Networks

- **IERG5280**
  - Mobile Networking

- **IERG5240**
  - Algorithms & Realization in IoT

- **IERG5300**
  - Random Processes for Engineers

- **IERG5280**
  - Mobile Networking

- **IERG5240**
  - Algorithms & Realization in IoT
Courses on Software, Computer Networking, Cyber Security, Big Data

IERG3320  Social Media and Human Information Interaction
IERG3280  Networks: Technology, Economics & Social Interactions
ENGG1110  Problem Solving by Programming
CSCI2100  Data Structures
IERG2080  Introduction to System Programming
IERG3080  Software Engineering and Practices
IERG3310  Computer Networks
CSCI3150  Introduction to Operating Systems
IERG3090  Network Protocols and Systems
IERG4180  Network Software Design and Programming
IERG3800  Information Infrastructure Lab
IERG4831/4841  Networking Laboratories I/II
IERG4080  Building Scalable Internet-based Services
IERG4130  Introduction to Cyber Security
IERG4130  Introduction to Cyber Security
IERG4210  Web Programming and Security
IERG4220  Secure Software Engineering
IERG4330  Programming Big Data Systems
IERG4230  Introduction to Internet of Things
IERG5090  Advanced Networking Protocols and Systems
IERG5270  Advanced Topics in P2P Networks and Systems
IERG5280  Mobile Networking
IERG5240  Applied Cryptography
IERG5310  Security & Privacy in Cyber Systems
IERG5320  Digital Forensics
IERG5330  Networks Economics
IERG5130  Probabilistic Models and Inference Algorithms for Machine Learning
IE MAJOR REQUIRED & ELECTIVES TO BE OFFERED IN 2018-19

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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<td>CSCI5590 (IERG5590)</td>
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IE STREAMS OF SPECIALIZATION

- Communications
- Internet Engineering
- Cyber Security
- Enrichment
- Big Data: Systems and Applications

- On voluntary basis.
- To qualify for a stream of specialization, the student must complete at least 12 units from the electives listed under the stream.
- A student who satisfies all the requirements of a stream of specialization may obtain a letter of certification from the department.
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IE STREAMS OF SPECIALIZATION

Cyber Security

CSCI 3150  Introduction to Operating Systems
IERG 4130  Introduction to Cyber Security  (Required)
IERG 4210  Web Programming and Security
IERG 4220  Secure Software Engineering
IERG 5240  Applied Cryptography
IERG 5310  Security & Privacy in Cyber Systems
IERG 5320  Digital Forensics
IERG 5590  Advances in Blockchains
# IE STREAMS OF SPECIALIZATION

## Enrichment

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# IE STREAMS OF SPECIALIZATION

## Big Data: Systems and Applications

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<tr>
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<td>CSCI 3320</td>
<td>Fundamental of Machine Learning</td>
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<td>CSCI 4180</td>
<td>Introduction to Cloud Computing and Storage</td>
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<td>CSCI 4190</td>
<td>Introduction to Social Networks</td>
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<td>ELEG 5491</td>
<td>Introduction to Deep Learning</td>
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ELITE (ENGINEERING LEADERSHIP, INNOVATION, TECHNOLOGY AND ENTREPRENEURSHIP) STREAM

- Elective Courses:
- 15 units of courses:
  (i) 12 units of ESTR courses of which at most 6 units of courses at 1000 or 2000 level and at least 6 units of courses at 3000 or 4000 level
  (ii) 3 units of BMEG/CENG/CSCI/ELEG/ENGG/IERG/MAEG/SEEM courses at 5000 level
Q & A