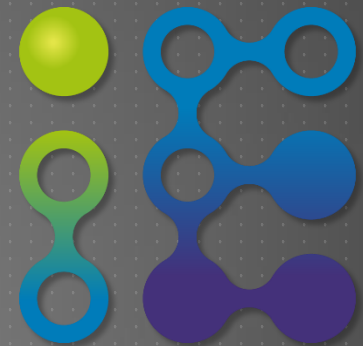


# COURSE COUNSELING

(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

- ▶ **ENGG2420 (ENGG2440)**  
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

- ▶ **ENGG2470 (ENGG2430)**  
Probability & Statistics
- ▶ **ENGG2601 (2 units)**  
Technology, Society and Engineering
- ▶ **ENGG2602 (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)

**IERG**

**MIEG (additional)**

# IERG/MIEG YEAR 4 MAJOR CORE

## Semester 7

▶ ENGG4998

Final Year Project I

## Semester 8

▶ ENGG4999

Final Year Project II

- **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



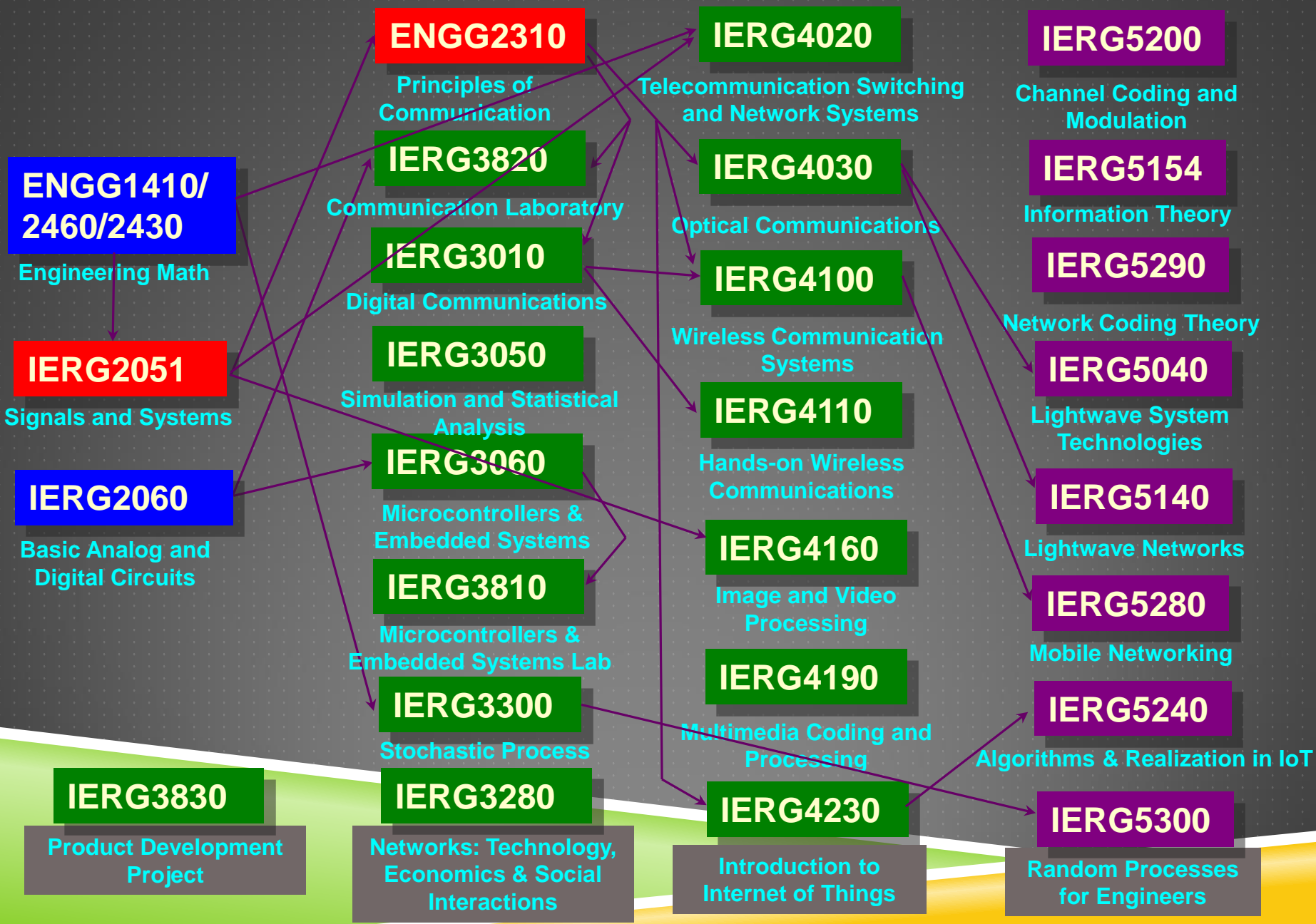
# IE MAJOR ELECTIVES

- IERG 4110** Hands-on Wireless Communications
- IERG 4130** Introduction to Cyber Security
- IERG 4160** Image and Video Processing
- IERG 4180** Network Software Design and Programming
- IERG 4190** Multimedia Coding and Processing
- IERG 4210** Web Programming and Security
- IERG 4220** Secure Software Engineering
- IERG 4230** Introduction to Internet of Things
- IERG 4300** Web and Information Analytics
- IERG 4330** Programming Big Data Systems
- IERG 4831** Networking Laboratory I
- IERG 4841** Networking Laboratory II

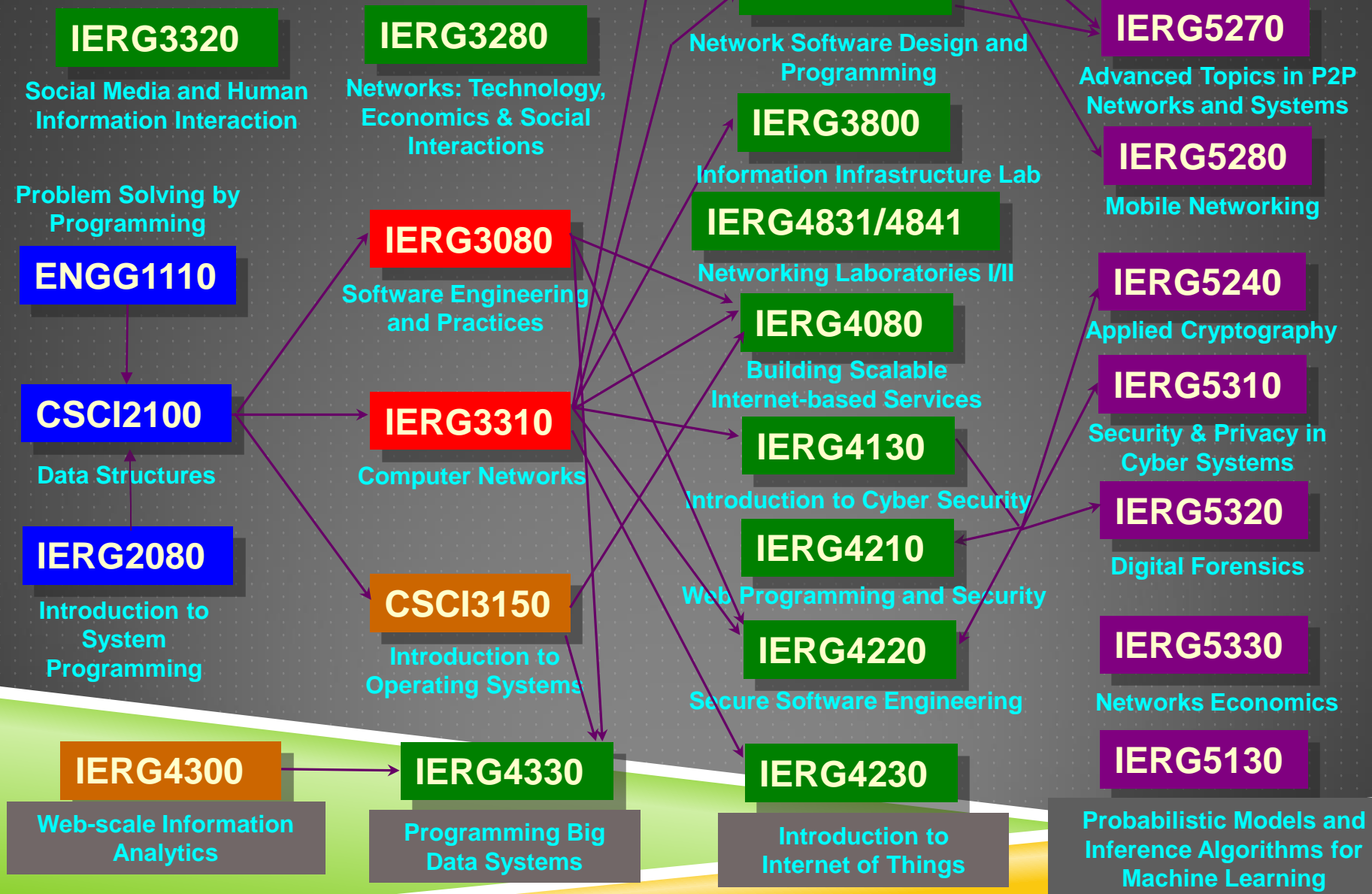
# IE MAJOR ELECTIVES

- 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



# Courses on Software, Computer Networking, Cyber Security, Big Data



**IERG3320**

Social Media and Human Information Interaction

**IERG3280**

Networks: Technology, Economics & Social Interactions

Problem Solving by Programming

**ENGG1110**

**CSCI2100**

Data Structures

**IERG2080**

Introduction to System Programming

**IERG3080**

Software Engineering and Practices

**IERG3310**

Computer Networks

**CSCI3150**

Introduction to Operating Systems

**IERG4300**

Web-scale Information Analytics

**IERG4330**

Programming Big Data Systems

**IERG4090**

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

**IERG4210**

Web Programming and Security

**IERG4220**

Secure Software Engineering

**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

## First Semester

- IERG3050
- IERG3320
- IERG4080
- IERG4100
- IERG4190
- IERG4210
- IERG4300
- IERG4831
- IERG4841
- IERG5130
- ENGG5383  
/IERG5240
- IERG5330

- IERG2080
- ENGG2310
- IERG2060
- IERG2602
- IERG3080
- IERG3310
- IERG3800
- IERG1810
- IERG3820

## Second Semester

- IERG3010
- IERG3280
- IERG3830
- IERG4030
- IERG4090
- IERG4130
- IERG4160
- IERG4180
- IERG4230
- IERG4330
- IERG4831
- IERG4841
- CSCI3150
- ENGG5301/IERG5154
- ENGG5303 /IERG5100
- IERG5340
- CSCI5590 (IERG5590)
- CSCI2100D
- IERG2051
- IERG3310
- IERG3800
- IERG3060
- IERG3810

# 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.

# IE STREAMS OF SPECIALIZATION

## Communications

- IERG 3010** Digital Communications
- IERG 3280** Networks: Technology, Economics, and Social Interactions
- IERG 3300** Introduction to Stochastic Processes
- IERG 4030** Optical Communications
- IERG 4100** Wireless Communication Systems
- IERG 4110** Hands-on Wireless Communications
- IERG 4130** Introduction to Cyber Security
- IERG 4230** Introduction to Internet of Things
- IERG 5020** Telecommunication Switching and Network Systems
- IERG 5040** Lightwave System Technologies
- IERG 5100** Advanced Wireless Communications
- IERG 5200** Channel Coding and Modulation
- IERG 5280** Mobile Networking
- IERG 5230** Algorithms and Realization of Internet of Things Systems
- IERG 5330** Network Economics



# IE STREAMS OF SPECIALIZATION

## Internet Engineering

<b>CSCI 3150</b>	Introduction to Operating Systems <b>(Required)</b>
<b>IERG 3050</b>	Simulation and Statistical Analysis
<b>IERG 3280</b>	Networks: Technology, Economics, and Social Interactions
<b>IERG 3300</b>	Introduction to Stochastic Processes
<b>IERG 4080</b>	Building Scalable Internet-based Services
<b>IERG 4090</b>	Network Protocols and Systems
<b>IERG 4130</b>	Introduction to Cyber Security
<b>IERG 4180</b>	Network Software Design and Programming
<b>IERG 4190</b>	Multimedia Coding and Processing
<b>IERG 4210</b>	Web Programming and Security
<b>IERG 4831</b>	Networking Laboratory I
<b>IERG 4841</b>	Networking Laboratory II
<b>IERG 5090</b>	Advanced Networking Protocols and Systems
<b>IERG 5270</b>	Advanced Topics in P2P Networks and Systems
<b>IERG 5280</b>	Mobile Networking



# IE STREAMS OF SPECIALIZATION

## Cyber Security

<b>CSCI 3150</b>	Introduction to Operating Systems
<b>IERG 4130</b>	Introduction to Cyber Security <b>(Required)</b>
<b>IERG 4210</b>	Web Programming and Security
<b>IERG 4220</b>	Secure Software Engineering
<b>IERG 5240</b>	Applied Cryptography
<b>IERG 5310</b>	Security & Privacy in Cyber Systems
<b>IERG 5320</b>	Digital Forensics
<b>IERG 5590</b>	Advances in Blockchains

# IE STREAMS OF SPECIALIZATION

## Enrichment

<b>ENGG 4030</b>	Web and Information Analytics
<b>IERG 3010</b>	Digital Communications
<b>IERG 3050</b>	Simulation and Statistical Analysis
<b>IERG 3280</b>	Networks: Technology, Economics, and Social Interactions
<b>IERG 3300</b>	Introduction to Stochastic Processes
<b>IERG 4100</b>	Wireless Communication Systems
<b>IERG 4190</b>	Multimedia Coding and Processing
<b>IERG 5154</b>	Information Theory
<b>IERG 5200</b>	Channel Coding and Modulation
<b>IERG 5270</b>	Advanced Topics in P2P Networks and Systems
<b>IERG 5290</b>	Network Coding Theory
<b>IERG 5300</b>	Random Processes for Engineers

# IE STREAMS OF SPECIALIZATION

## Big Data: Systems and Applications

<b>ENGG 4030</b>	Web-scale Information Analytics <b>(Required)</b>
<b>IERG 3320</b>	Social Media and Human Information Interaction
<b>IERG 4080</b>	Building Scalable Internet-Based Services
<b>IERG 4160</b>	Image and Video Processing
<b>IERG 4230</b>	Introduction to Internet of Things
<b>IERG 4330</b>	Programming Big Data Systems
<b>IERG 5130</b>	Probabilistic Models and Inference Algorithms for Machine Learning
<b>CSCI 3320</b>	Fundamental of Machine Learning
<b>CSCI 4180</b>	Introduction to Cloud Computing and Storage
<b>CSCI 4190</b>	Introduction to Social Networks
<b>ELEG 5491</b>	Introduction to Deep Learning

# **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

