

Systems Engineering and Engineering Management

Course Description

(Unless otherwise specified, all are 3-unit term courses of three hours of lecture and one hour of tutorial per week.)

SEG 2410

Linear Algebra and Discrete Mathematics

1st term

Linear algebra: review of vector space, matrix and its inverse, linear transform, inner product. Generalized inverse matrix, eigenvalues and eigenvectors. Discrete mathematics: review of sets and tuples, relations and functions, graphs, permutations and combinations. Boolean algebra, propositional and predicate logic. Introductory computability theory.

SEG 2420

Operations Research I

1st term

Review of linear algebra. Linear programming: simplex methods, duality, and sensitivity analysis. Network flows: transportation and assignment problems, shortest paths, minimum spanning trees, network simplex method, multicommodity flows. Modelling issues in linear programming and network flows applications.

SEG 2430

Applied Probability and Statistics

1st term

Sample space. Random variable. Probability and conditional probability. Distribution. Expectation and variance. Characteristic function. Law of large numbers and central limit theorem. Markov chain. Poisson process. Estimation: errors, sample size, maximum likelihood estimation, and consistency. Regression. Time Series.

SEG 2440

Engineering Economics

2nd term

Principles of engineering economy. Value and cost, cash flows. Economic analysis of alternatives, technological, social, and human factors. Models involving allocation and scheduling of resources. Analytical techniques for evaluating industrial projects. Relationship between economics of technical choice and industrial productivity. Basic financial accounting concepts, accounting cycle, financial statements.

SEG 2450

Production Planning and Control

1st or 2nd term

Overview of engineering economy. Introduction to industrial organizations and functions of management. Principles of production planning and control. Inventory management. Materials requirements planning. Stochastic modelling of manufacturing systems. Manufacturing resources planning. Capacity planning and scheduling. Productivity measurement and analysis. Just-in-time approach. Quality management; introduction to ISO 9000. (Not for Systems Engineering and Engineering Management Majors.)

SEG 2470

Fundamentals in Engineering Management

1st or 2nd term

This course is aimed at introducing students to the basics of engineering management. The major topics include: management tasks, industrial and engineering organizations, strategic management and decision making, financial management, and basic marketing concepts. The use of mathematical models and computer-aided decision support is emphasized.

SEG 3410

System Simulation

2nd term

System concept and mathematical models. Model building: parameter estimation, and data analysis. Elementary queuing theory and applications: M/M/S models. Introduction to simulation and simulation language. Principles of discrete event simulation. Random number generators and output analysis. Optimization via simulation. Applications to production and manufacturing systems. Prerequisites: CSC 1110 and SEG 2430 or their equivalents.

SEG 3420

File Structures and Processing

1st or 2nd term

Role of files in data processing. Data organization on secondary storage. Choice of storage media. Blocking and buffering. Design of file parameters and performance computation of file processing. Record clustering and record partitioning. File organizations and access methods for sequential, indexed, and direct file organizations. VSAM files. Static and dynamic hashed files. Hybrid files. Prerequisite: SEG 3460 or its equivalent.

SEG 3430

Information Systems Analysis and Design

2nd term

Information system development life cycle, user requirement analysis, feasibility study, cost/benefit analysis, systems analysis tools such as data flow diagrams, process specification tools. Real time systems analysis. Transformation from analysis to design. Structured chart. System design quality heuristics such as coupling, cohesion. System design packaging and design optimization: CASE (Computer-Aided Software Engineering) Tools. Prerequisite: SEG 3460 or its equivalent.

SEG 3440

Operations Research II

2nd term

Non-linear programming: convex sets and functions, local and global optima, Lagrange multipliers, optimality conditions for unconstrained problems, descent methods, constrained optimization, Karush-Kuhn-Tucker conditions, solution methods. Non-differentiable optimization: integer programming models, formulations, cutting-plane methods, branch-and-bound. Dynamic programming: models and formulation, Bellman's equations, solution methods.

SEG 3450

Engineering Innovation and Entrepreneurship

2nd term

Factors that drive continuous creative product innovation. Study of processes of creating, assessing, and pursuing product opportunities. Evaluation of new product ideas and risk assessment of commercialization. Product development strategies in industrial marketing. Understanding the behaviour of buyer. Formulation and implementation of innovative marketing strategy and business plan. Prerequisite: SEG 2440 or 2450 or its equivalent.

SEG 3460

Computer Processing Systems Concepts

1st term

Principles of operating system functions. Introduction to assemblers, linkers, loaders, and libraries. Performance analysis of scheduling algorithm. Applications based on systems such as DOS, UNIX and MVS/ESA. Job control language, procedures, parameter passing, and utilities. Comparison of programming languages of different levels and their evaluation and selection based on application needs. Prerequisite: CSC 1110 or its equivalent.

SEG 3470

Dynamic Optimization and Applications

1st or 2nd term

Dynamic programming for sequential decision making under uncertainty, optimal control and combinatorial optimization. Applications to network problems (shortest paths, Viterbi algorithm, the travelling salesman problem) and discrete time dynamic optimization problems of finite and infinite horizon (linear-quadratic optimal control, inventory control, portfolio analysis). Numerical solution methods for infinite-time dynamic programming: value iteration, policy iteration, linear programming. Introductory continuous-time optimal control: calculus of variations, Pontryagin principle and the Hamilton-Jacobi-Bellman equation. Prerequisites: SEG 2430 and 3440 or their equivalents.

SEG 3490

Information Systems Management

1st or 2nd term

In-depth discussion of the challenges, techniques, and technologies associated with the management of IT in a competitive environment. The linkage of IT to business strategy, and business process re-engineering. Type of information systems: MIS, DSS, TPS. Development process. Information system planning. Systems project management and control. IT acquisition, budgeting, and deployment. Performance evaluation, and auditing. Operations management. Privacy and security. Prerequisite: SEG 3430 or its equivalent.

SEG 3500

Quality Control and Management

1st or 2nd term

Quality planning, control, and improvement. Sampling theory. Statistical quality control theory applied to production operations. Specification and control charts for monitoring production systems. Quality engineering - the Taguchi Method. Quality control issues of manufacturing and service industry. Case studies of quality control problems in industry. Use of computer aids. Introduction to ISO 9000. Prerequisite: SEG 2430 or its equivalent.

SEG 3510

Human-Computer Interaction

1st or 2nd term

This course provides an introduction to the fast evolving field of human computer interaction (HCI). HCI is a multidisciplinary subject concerning the design, implementation and evaluation of interactive computing systems for human use, and the study of major phenomena surrounding them. We will provide a broad overview of the field, including the theory and principles underlying good designs, with an emphasis on the interface design process, development and evaluation. We will also sample some state-of-the-art technologies in HCI, such as speech recognition, haptics, virtual reality, software agents, and computer supported cooperative work.

SEG 3520

Managing Information Technology

1st or 2nd term

Types of information systems: MIS, DSS, TPS. Subsystems. Development process. Information system planning. Establishing standards and procedures. Systems project management and control. Acquisition of resources. Budgeting for computer systems. Performance evaluation. Information system quality. Information technology concepts: networking, database, batch processing and distributed processing. Software quality assurance. Privacy and security. Auditing computer systems. Managing distributed and end-user information systems. Software cost estimation. (Not for students of Engineering Faculty.)

SEG 3530

Engineering and Technology Management

2nd term

Managerial functions: planning, organizing, influencing and control. Strategic formulation and decision making. Strategic and operational considerations of technology. Management of research, engineering design, and production functions. Project screening and selection. Project structuring, scheduling and budgeting. Project control.

SEG 3540

Concepts of Information Systems

1st or 2nd term

The roles of information systems in business application. Concepts of IS technology: databases, information retrieval, intelligent systems, transaction processing. Integration of different IS technologies. Concepts of telecommunication, Internet and Intranet. (Not for students of Engineering Faculty.)

SEG 3550

Fundamentals in Information Systems

1st term

Basic elements of information systems, their concepts and interrelations. Database systems: database models, relational database, database application programming. Information retrieval: models, indexing, performance evaluation. Expert systems: knowledge and data engineering, expert system shell and application studies.

SEG 3560

Introduction to E-Commerce

1st term

The course provides an overview of the technologies that support the development of E-Commerce applications, business models and strategies for E-Commerce, electronic payments and security, as well as legal issues related to E-Commerce such as intellectual property rights. (Not for students who have taken GEE 277X.)

SEG 3570

Stochastic Models

1st term

Review of basic probability. Probabilistic dynamic programming. Stochastic processes and Markov chains. Birth-and-death processes and queuing models. Stochastic inventory models: single and multiple periods. Forecasting and time series. Markov decision processes. Prerequisite: SEG 2430 or its equivalent.

SEG 3810

Product Development Project

1 U; 1 Lab.; 2nd term

SEG 4410

Real-Time Computer Systems

1st or 2nd term

Introduction to real-time data processing systems and their design and analysis. Reliability and Fault tolerance. Exception and exception handling. Concurrent programming. Shared-memory-based synchronization and communication. Message-passing-based synchronization and communication. Atomic actions and error recovery in concurrent processes environment. Resource control. Real-time facilities of real-time languages. Implementation efficiency. Case studies. Prerequisite: SEG 3460 or its equivalent.

SEG 4420

Combinatorial Optimization

1st or 2nd term

Overview of combinatorial optimization. Optimization on networks: maximum-cardinality matching, maximum-weight matching, travelling salesman problem, vehicle routing problem. Packing: formulations, solutions, and analysis of capital budgeting problems. Covering: formulations, solutions algorithms, and applications to airline crew scheduling and facility locating. Graph coloring: definitions, basic properties, and solutions. Introduction to NP-hardness. Prerequisite: SEG 3440 or its equivalent.

SEG 4430

Stochastic Models in Decision Making

1st or 2nd term

Elementary factors in stochastic models. Stochastic dynamic programming. Advanced topics in queuing system: queuing models involving nonexponential distributions, queuing networks, Monte Carlo analysis, and decision models. Stochastic inventory models: single and multiple period models with and without set-up costs. Forecasting techniques: constant level models and linear trend models. Prerequisites: SEG 2430 and 3440 or their equivalents.

SEG 4480

Decision Methodology and Applications

1st or 2nd term

Review of basic decision analysis concepts and methodologies. Single- and multiattribute utility theory under both certainty and uncertainty. Assessment methodologies, strength of preference, risk attitude, and trade-off judgements. Prior information, subjective probability, Bayesian analysis, and sequential analysis. Multiobjective optimization, methods for generating Pareto optimum solutions, methods with prior assessment of preferences, and method with progressive assessment of preferences. Risk sharing and group decisions. Cooperative and non-cooperative game methods. Applications to risk analysis and management. Prerequisites: SEG 2430 and 3440 or their equivalents.

SEG4500

Facility Management

1st or 2nd term

Construction and renovation. Maintenance and operation. Real estate consideration and planning. Space planning layout. Facility financial forecasting and management. General administrative services. Successful facility management. Industrial applications. Prerequisite: SEG 2420 or its equivalent.

SEG4510

Case Studies in Decision Making

1st or 2nd term

Review of quantitative decision making methods. Examination of problems arising from practical business planning and operations, and applications of quantitative methods, including mathematical tools and operations research techniques, to solve problems. Emphasis will be placed on studies of cases of successful real-world applications and project work. Prerequisites: SEG 3410 and 3440 or their equivalents.

SEG4520

Intelligent Management Support Systems

1st or 2nd term

Decision modelling and support. Overview of management support systems. Data and model management in decision support systems. Group decision process. Group decision support systems and distributed group decision support systems. Executive information and support systems. Applications of artificial intelligence methodologies in decision support of accounting, investment, and marketing systems. Integration of decision support technologies. Design and development of management support systems. Organizational and societal impacts. Prerequisite: CSC 3230 or its equivalent.

SEG4530

Introduction to Client/Server Systems

1st or 2nd term

Client/server theory and practice. Management aspects: vision, priority and transition strategies, operational challenges. Overview of major protocols and distributed system concepts. Prerequisite: SEG 3460 or its equivalent.

SEG4540

Open Systems and E-Commerce

1st or 2nd term

Overview of open system standards and protocols. Electronic commerce applications using open system and AI technologies. Application of intelligent agents for the automated transaction processing. Integration of HTML and JAVA with information and communication systems. Prerequisite: SEG 3460 or its equivalent.

SEG4550

Production Systems Planning and Management

1st or 2nd term

Systems analysis and business process re-engineering. Performance variability and measures. Push and pull production systems. Operations planning. Production scheduling. Aggregate and workforce planning. Capacity planning and management. Enterprise resource planning systems.

SEG4560

Computational Intelligence for Decision Making

1st or 2nd term

Introduction to knowledge-based system, neural computing, genetic algorithm, and fuzzy logic. Inference methods and uncertainty management in design and implementation of expert systems. Application of computational intelligence techniques to management decision systems in specific business areas. Prerequisite: CSC 2100 or its equivalent.

SEG4570

System Design and Implementation

1st or 2nd term

System implementation methodology construction, testing, maintenance. Software re-engineering and reverse engineering, software reliability and programme quality assurance; software reusability. Software metrics. Performance engineering. Configuration management. Object oriented system design. Use of computer-aided tools. Prerequisite: SEG 3430 or its equivalent.

SEG4580

Special Topics in SE&EM I

1st or 2nd term

This course is designed to investigate and to discuss selected topics of current interest in Systems Engineering and Engineering Management.

SEG4581

Special Topics in SE&EM II

1st or 2nd term

This course is designed to investigate and to discuss selected topics of current interest in Systems Engineering and Engineering Management.

SEG4590

Special Topics in SE&EM III

1st or 2nd term

This course is designed to investigate and to discuss selected topics of current interest in Systems Engineering and Engineering Management.

SEG4591

Special Topics in SE&EM IV

1st or 2nd term

This course is designed to investigate and to discuss selected topics of current interest in Systems Engineering and Engineering Management.

SEG4600

Logistics Management

1st or 2nd term

The integrated logistics management concept. Customer service. Channels of distribution. Transportation, vehicle routing and scheduling, freight consolidation. Facility location and network planning. Storage and material handling systems. Information systems for order processing and inventory tracking. Purchasing and supply scheduling. Business process re-engineering. Third-party logistics. Global logistics.

SEG4610

Supply Chain Management

1st or 2nd term

Management of moving raw materials, in-process inventory, and finished-goods; transferring information and payment. Topics include: distribution, inventory management, purchasing and supplier management, the value of information and information technology, supply chain integration and strategic partnering, product design for supply chain management.

SEG4620

Electronic Payments Systems

1st or 2nd term

This course covers various methods of transferring payments over the Internet and compares their functionality. Topics include electronic cash, electronic checks, electronic credit cards, micro-payments, certification of authority, the encryption and digital signature techniques needed to support electronic cash, and the technologies available to support secure transactions on the Internet. Implementations of various payment systems are examined.

SEG4630

E-Commerce Data Mining

1st or 2nd term

This course introduces data mining techniques suitable for E-Commerce applications. It covers the following topics: prediction, association rule mining, rule induction, trend and deviation analysis, pattern visualization, and data mining packages. Emphasis will be placed on employing these techniques to marketing, risk management, business negotiation, and commercial applications.

SEG4640

Financial Decision and Pricing Models

1st or 2nd term

Review of important concepts in financial decision theory such as utility theory, arbitrage, market efficiency hypothesis, mean-variance analysis, capital asset pricing models, separation theorems, and arbitrage pricing theory and option pricing. Computational techniques such as stochastic programming, binomial trees and the finite difference method. Prerequisites: SEG 2440 or FIN 2010 or their equivalents and SEG 2420.

SEG5410

Optimal Control

3 U; 3 Lect.; 1st or 2nd term

Dynamic continuous-time systems. Examples, modelling, and classification of optimal control problems. Pontryagin's maximum principle: adjoint equation, Hamiltonian system, and sufficient condition of optimality. Bellman's dynamic programming: principle of optimality, Hamilton-Jacobi-Bellman equation, and verification theorem. Linear quadratic control: Riccati equation and linear matrix inequality. Introduction to numerical methods of solving optimal control problems.

SEG5420

Scheduling and Sequencing

3 U; 3 Lect.; 1st or 2nd term

Classification of scheduling and sequencing problems. Sequencing involving capacity expansion. Single machine scheduling involving due dates: problem formulation and applications, complexity, exact solutions and approximate solutions. Parallel machine scheduling. Flowshop scheduling. Jobshop scheduling. Batch scheduling with set-up times between batches. Prerequisite: SEG 3440 or its equivalent.

SEG 5430

Optimal Production Planning

3 U; 3 Lect.; 1st or 2nd term

Overview of manufacturing systems: resources, constraints, cost, planning horizon, and objective of production planning. Deterministic production planning: parallel machine systems, flowshops and jobshops. Dynamic programming equations, zero-inventory policy. Capacity expansion and HMMS model. Stochastic production planning: unreliable machines, Markov Chains, Akella-Kumar theorem and threshold-type policy. Hierarchical production planning. Prerequisites: SEG 2430 and 3440 or their equivalents.

SEG 5440

Selected Topics in Discrete Optimization

3 U; 3 Lect.; 1st or 2nd term

Review of classical optimization. NP-hardness and using NP-hardness to analyse discrete optimization problems. Design and analysis of algorithms for easy and hard problems, including dynamic programming with pseudo-polynomial complexity, simulated annealing, fully polynomial approximation schemes, genetic algorithms, and heuristics. Prerequisite: SEG 3440 or its equivalent.

SEG 5450

Discrete Event Systems

3 U; 3 Lect.; 1st or 2nd term

Discrete event systems (DESS) modelling, manufacturing systems, computer networks and air-traffic control systems. Methodologies and techniques in analysing, controlling and managing of DESS: discrete event simulation, perturbation analysis, supervisory control and automata, Petri net, max algebra, etc. Prerequisite: SEG 3410 or its equivalent.

SEG 5460

Information Systems Engineering

3 U; 3 Lect.; 1st or 2nd term

Review of information systems development, systems project planning and control, and other related managerial issues; information systems engineering economics; quantitative analysis of systems development; systems cost and effectiveness analysis; design principles and methodology for management information systems, decision support systems, real-time systems, and unsurveyable systems. Prerequisite: SEG 3430 or its equivalent.

SEG 5470

Knowledge Systems

3 U; 3 Lect.; 1st or 2nd term

The roles of knowledge systems in problem solving. Automation of commonsense reasoning. Nonmonotonic and Plausible reasoning. Representation and reasoning about quantities, measurements, time, space, and physics. Knowledge systems to represent mind, plans and goal.

SEG 5480

Engineering Management Strategy

3 U; 3 Lect.; 1st or 2nd term

The course introduces students to the basics of strategic management. All aspects of strategic planning tools and techniques, strategy formulation and decision making, and implementation and control are covered. Topics include SWOT analysis, forecasting models, decision methodology, project planning, implementation, and evaluation, team building and communication. Integration of business functions such as finance, human resources, marketing, and production and operations is emphasized.

SEG 5490

Advanced Engineering Economics

3 U; 3 Lect.; 1st or 2nd term

Accounting income. Cash flow modelling. Depreciation and taxation. Overview of utility theory. Analysis of economic risk. Risk simulation. Decision tree analysis. Procedures for replacement analysis. Activity-based costing. Analytical hierarchy process. Economic optimization under constraints. Strategic investment analysis. Prerequisite: SEG 2440 or its equivalent.

SEG 5520

Optimization I

3 U; 3 Lect.; 1st or 2nd term

The course covers the underlying theory and fundamental solution methodologies of mathematical programming: linear programming, unconstrained and constrained non-linear optimization. Topics include optimality conditions, search methods, descent methods, Lagrange multipliers, penalty functions. Developments of duality theory are presented. Concepts and issues in global optimization and multi-objective optimization are introduced. Applications are drawn from engineering and financial optimization.

SEG 5530

Client/Server Systems Engineering

3 U; 3 Lect.; 1st or 2nd term

Issues in building client/server information systems. Concept, implementation, and management aspects in the development cycle of client/server systems. Advanced technology such as distributed objects, CORBA and COM+, component technology, and client/server system management.

SEG 5540

Optimization II

3 U; 3 Lect.; 1st or 2nd term

The first part of this course covers underlying theory and fundamental solution methodologies of integer programming: optimality, relaxation and bounds, complexity and problem reductions, branch and bound, cutting plane algorithms, strong valid inequalities and duality theory. The second part of this course covers some of the recent developments in mathematical programming: interior point methodology, conic optimization and semidefinite programming. Various applications in engineering, management, and financial economics are discussed.

SEG 5570

Numerical Methods in Finance

3 U; 3 Lect.; 1st or 2nd term

This course emphasizes the use of numerical methods for solving financial problems. The numerical methods include: binomial trees, Monte Carlo simulation, stochastic programming, linear/quadratic control models and semidefinite programming techniques. Those techniques will be applied, among other things, to: option pricing, index tracking, portfolio optimization, interest rate models, and asset/liability management.

SEG 5580

Advanced Stochastic Models

3 U; 3 Lect.; 1st or 2nd term

Poisson process. Birth-and-death process, Markov chain. Martingale. Brownian motion. Renewal and stationary processes. Stochastic integration and Ito's formula. Applications to queueing models, inventory models, and financial investment/hedging models.

SEG 5590

Financial Decision Models

3 U; 3 Lect.; 1st or 2nd term

Utility theory. Mean-variance model. Capital asset pricing. Asset dynamics, Ito processes. Option pricing, Black-Scholes formula. Term structure, interest-rate derivatives. Introduction to stochastic optimal control model and Hamilton-Jacobi-Bellman equation.

SEG 5600

Logistics and Transportation Planning

3 U; 3 Lect.; 1st or 2nd term

Global logistics management. Facility location models. Network design. Transportation planning: mode selection, routing and scheduling. Transportation and transshipment problems. Vehicle routing models. Fleet management. Less-than-truckload deliveries. Warehouse layout and management. The lotsize/inventory/transportation tradeoff. Enabling technologies for logistics management.

SEG 5610

Inventory and Supply Chain Management

3 U; 3 Lect.; 1st or 2nd term

Strategic importance of inventory management. Deterministic and Stochastic inventory models. Co-ordinated replenishment for multiple items. Enterprise resources planning. Multi-echelon inventory management: constant and time-varying demand models. Push and pull systems. Coordination and incentive issues in a supply chain. The value of information. Strategic partnering and product design for supply chain management.

SEG 5620

Data Warehousing for Financial Engineering

3 U; 3 Lect.; 1st or 2nd term

This course addresses the data and decision aspects of financial information systems. The data aspect includes collection, cleansing, storage, and retrieval of quantitative and qualitative financial data. The decision aspect include on-line analytical processing on financial data and data mining for nontrivial data pattern and knowledge.

Study Scheme

Major Programme

There are four streams of specialization: E-Commerce Systems, Financial Engineering, Information Systems, and Logistics and Supply Chain Management. Students may choose to specialize in one of the four streams and select certain courses as prescribed. A student who does not wish to specialize in any of the four streams should follow a study scheme devised with the advice of the academic advisers of the Department.

Students are required to complete a minimum of 81 units of Major courses as follows:

- | | | |
|-----|---|----------|
| (i) | Required Courses: | 57 units |
| | ERG 2020, 4910#, 4920#, SEG 2420, 2430, 2440, 3410, | |
| | 3430, 3440, 3450, 3460, 3530, 3550, 3560, 3570, | |
| | 3810, ELT 1111, CSC 1110, 2100 | |

- (ii) Eight Elective Courses from: 24 units
 SEG 3420, 3470, 3490, 3500, 3510, 4410, 4480, 4530,
 4540, 4550, 4560, 4570, 4580, 4590, 4600, 4610,
 4620, 4630, 4640, 5410, 5420, 5430, 5470, 5480,
 5490, 5520, 5530, 5540, 5570, 5580, 5590, 5600,
 5610, 5620, CSC 3230[#], FIN 3010[#], 3080[#], 4040[#],
 MAT 4210[#], 4250[#]

Total: 81 units

Streams of Specialization

Students choosing a stream of specialization should take, among the eight elective courses, at least six courses from the corresponding list for their stream of specialization; the remaining courses can be chosen from outside their stream of specialization.

E-Commerce Systems Stream

SEG 3490, 3510, 4530, 4540, 4610, 4620, 4630, FIN 3080[#]

Financial Engineering Stream

SEG 3490, 4480, 4560, 4630, 4640, FIN 3010[#], 3080[#], 4040[#]

Information Systems Stream

SEG 3420, 3490, 3510, 4410, 4530, 4560, 4570, CSC 3230[#]

Logistics and Supply Chain Management Stream

SEG 3470, 3490, 3500, 4480, 4540, 4550, 4600, 4610

Recommended course pattern

Term 1	Units	Term 2	Units	Term 3	Units
General Education	3	General Education	3	General Education	3
Physical Education	1	Physical Education	1	SEG 3460	3
CSC 1110	3	CSC 2100	3	SEG 3550	3
ELT 1111	3	ERG 2020	3	SEG 3560	3
SEG 2420	3	SEG 2440	3	SEG 3570	3
SEG 2430	3	SEG 3440	3	Major Elective for respective streams	3
		Free Elective	3		
	—		—		—
	16		19		18
Term 4	Units	Term 5	Units	Term 6	Units
General Education	3	ERG 4910	4	ERG 4920	4
SEG 3410	3	Major Electives for respective streams	9	Major Electives for respective streams	9
SEG 3430	3	Free Elective	1		
SEG 3450	3				
SEG 3530	3				
SEG 3810	1				
Major Elective for respective streams	3				
	—		—		—
	19		14		13

SUMMARY

	Units
General Education	12
Physical Education	2
Major Required Courses	57
Major Electives	24
Free Electives	4
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Total	99

- Notes: 1. Major courses coded 3000 and above will be included in the calculation of the Major GPA for honours classification. Courses with “#” are to be included in the Major GPA as well.
2. Besides the Major courses mentioned in Note 1, the ACE, CEG, CSC, ELE, ERG, IDE, IEG and INE courses coded 3000 and above taken by the students will also be included in calculation of the Major GPA.
3. Students are strongly advised to consult with the academic advisors of the Department in choosing elective courses.