Digital Engineering (DE)

Curriculum Outline

The digital engineering curriculum is designed to prepare students for rapidly changing digital technology and its applications. Emphasis is put on the area of application software development based on new trends such as artificial intelligence, machine learning, and cloud computing, as well as that of data science, including big data analytic and data modeling.

The compulsory core courses are designed to help students to:

(1) understand fundamental concepts related to computers and digital technology that lead to high performance digital and information processing,
(2) gain fundamental concepts related to management and analysis of large-scale structured and unstructured data, and
(3) know the essence of techniques that are needed for application of digital technology to industry and business.

After gaining enough background through the compulsory core courses, the students are allowed to tailor their courses according to their personal interest. Twelve credits of elective courses, which are required for graduation, can be selected from one of these:

(1) Application Software Development,
(2) Data Science, or
(3) General Digital Engineering

Structure and Components

1. General Basic Courses		**30 Credits**
1.1 Part I		21 Credits
	1.1.1 Social Sciences	6 Credits
	1.1.2 Humanities	3 Credits
	1.1.3 Science and Mathematics	3 Credits
	1.1.4 Languages	9 Credits
1.2 Part II		9 Credits
2. Major Courses		**105 Credits**
2.1 Core Engineering Courses		37 Credits
2.2 Specialized Courses		47 Credits
2.3 Elective Courses		15 Credits
2.4 Field-Experience Courses		6 Credits
3. Free Elective Courses		**15 Credits**
Total		**150 Credits**

Details of the Curriculum

1. General Basic Courses **30 Credits**

1.1 Part I 21 Credits

1.1.1 Social Sciences (2 courses) 6 Credits
TU100 TU101 or TU109

1.1.2 Humanities (1 course) 3 Credits
TU102 or TU108

1.1.3 Science and Mathematics (1 course) 3 Credits
TU103 or TU107

1.1.4 Languages (3 courses) 9 Credits
TU104 TU105 TU106

1.2 Part II 9 Credits
GTS133 GTS202 ITS100

2. Major Courses **105 Credits**

2.1 Core Courses 37 Credits

2.1.1 Core Engineering Courses
CSS322 DES201 DES232 DES322
DES400 GTS116 GTS117 GTS121
GTS122 GTS210 GTS231 GTS302
IES302 MTS252

2.2 Specialized Courses 47 Credits

2.2.1 Technologies for Applications 10 Credits
DES324 CSS325 CSS326 DES229

2.2.2 Technologies and Software Processes 14 Credits
DES102 DES103 DES221 DES227
DES231 DES329

2.2.3 System Infrastructure 13 Credits
CSS221 CSS225 CSS324 DES331 DES352

2.2.4 Hardware and Computer Architecture 10 Credits
CSS224 DES332 EES370 EES371

2.3 Elective Courses 15 Credits

2.3.1 Specialized Elective Courses
Select one of the following options;

2.3.1.1 **Option I: Application Software Development** 12 Credits
DES421 DES422 DES423 DES424

2.3.1.2 **Option II: Data Science** 12 Credits
DES431 DES432 DES433 DES434

2.3.1.3 **Option III: General Digital Engineering** 12 Credits
Select 4 courses from the following courses:
DES421 DES422 DES423 DES424
DES431 DES432 DES433 DES434
DES481 DES482 DES483 DES484
DES485 DES486 DES487 DES488
DES489

2.3.2 Technical Elective Course 3 Credits
Select 3 credits from the list of courses offered by SIIT, except for basic courses.
XXSxxx

2.4 Field-Experience Courses 6 Credits
Select one of the following tracks

2.4.1 Senior Project Track
DES300 DES403

2.4.2 Foreign Exchange Track
DES300 DES495 DES497

2.4.3 Extended Training Track
DES499

3. Free Elective Courses **15 Credits**

Students may choose any free elective courses (not less than 15 credits in total) offered by SIIT or TU including general basic courses, except:

1. General basic courses in Science and Mathematics.
2. General basic TU courses.
3. Courses with contents similar to those of other courses in the curriculum already taken by the students.

Total Credit Requirement **150 Credits**

DE Curriculum : 150 Credits

First Year

Semester I

GTS116	Mathematics for Technologists I	3(3-0-6)
GTS121	General Science I	3(3-0-6)
GTS133	Environmental Studies	3(3-0-6)
ITS100	Introduction to Computers and Programming	3(2-3-4)
MTS252	Materials Science	3(3-0-6)
TU102	Social Life Skills	3(3-0-6)
or		
TU108	Self Development and Management	3(3-0-6)
TU104	Critical Thinking, Reading, and Writing	3(3-0-6)
	Sub-Total	**21(20-3-40)**

Semester II

DES102	Object-Oriented Programming	3(3-0-6)
DES103	Object-Oriented Programming Laboratory	1(0-3-0)
GTS117	Mathematics for Technologists II	3(3-0-6)
GTS122	General Science II	3(3-0-6)
TU100	Civic Engagement	3(3-0-6)
TU103	Life and Sustainability	3(3-0-6)
or		
TU107	Digital Skill and Problem Solving	3(3-0-6)
TU105	Communication Skills in English	3(3-0-6)
TU106	Creativity and Communication	3(3-0-6)
	Sub-Total	**22(21-3-42)**

Second Year

Semester I

CSS224	Computer Architectures	3(3-0-6)
DES201	Discrete Mathematics	3(3-0-6)
DES221	Data Structures and Algorithms	3(3-0-6)
DES231	Data Structures and Algorithms Laboratory	1(0-3-0)
EES371	Digital Circuits	3(3-0-6)
GTS210	Mathematics for Technologists III	3(3-0-6)
GTS231	Law and Technology	3(3-0-6)
	Sub-Total	**19(18-3-36)**

Semester II

CSS221	Computer Graphics and Applications	3(2-3-4)
CSS225	Operating System	3(3-0-6)
DES227	Algorithm Design	3(3-0-6)
DES229	Human Computer Interface Design	3(3-0-6)
DES232	Introduction to Data Communications	3(3-0-6)
EES370	Digital Circuit Laboratory	1(0-3-0)
IES302	Engineering Statistics	3(3-0-6)
	Sub-Total	**19(17-6-34)**

Third Year

Semester I

CSS322	Scientific Computing	3(3-0-6)
CSS324	Artificial Intelligence	3(3-0-6)
CSS325	Database Systems	3(3-0-6)
CSS326	Database Programming Laboratory	1(0-3-0)
DES322	Digital Business Experience	1(0-3-0)
DES331	Computer Networks Architectures and Protocols	3(3-0-6)
GTS202	English Language Structures	3(3-0-6)
XXXxxx	Free Elective	3(x-x-x)
	Sub-Total	**20(x-x-x)**

Semester II

DES324	Entrepreneurship for Digital Business	3(3-0-6)
DES329	System Analysis and Design	3(3-0-6)
DES332	Computer and Network Security	3(3-0-6)
DES352	Networking Laboratory	1(0-3-0)
GTS302	Technical Writing	2(2-1-3)
XXXxxx	Free Elective	3(x-x-x)

Option I: Application Software Development

DES421	Location-based Services and Digital Mapping	3(3-0-6)
DES422	Business Application Development	3(3-0-6)
	Sub-Total	**21(x-x-x)**

Option II: Data Science

DES431	Big Data Analytic	3(3-0-6)
DES432	Statistics and Data Modeling	3(3-0-6)
	Sub-Total	**21(x-x-x)**

Option III: General Digital Engineering

DESxxx	Compulsory Elective	3(x-x-x)
DESxxx	Compulsory Elective	3(x-x-x)
	Sub-Total	**21(x-x-x)**

Summer

1) Senior Project Track and Foreign Exchange Track

DES300	Digital Engineering Training	1(0-40-0)
	Sub-Total	**1(0-40-0)**

2) Extended Training Track

XXXxxx	Free Elective	3(x-x-x)
XXXxxx	Free Elective	3(x-x-x)
	Sub-Total	**6(x-x-x)**

Fourth Year

Semester I

DES400	Project Development	1(0-3-0)
TU101	Thailand, ASEAN, and the World	3(3-0-6)
or		
TU109	Innovation and Entrepreneurial mindset	3(3-0-6)
XXSxxx	Technical Elective	3(x-x-x)
XXXxxx	Free Elective	3(x-x-x)

Option I: Application Software Development

DES423	Applied Machine Learning and AI	3(3-0-6)
DES424	Cloud-based Application Development	3(3-0-6)
	Sub-Total	**16(x-x-x)**

Option II: Data Science

DES433	Data Visualization	3(3-0-6)
DES434	Data Mining and Machine Learning	3(3-0-6)
	Sub-Total	**16(x-x-x)**

Option III: General Digital Engineering

DESxxx	Compulsory Elective	3(x-x-x)
DESxxx	Compulsory Elective	3(x-x-x)
	Sub-Total	**16(x-x-x)**

Semester II

1) Senior Project Track

DES403	Digital Engineering Project	5(0-15-0)
XXXxxx	Free Elective	3(x-x-x)
XXXxxx	Free Elective	3(x-x-x)
	Sub-Total	**11(x-x-x)**

2) Foreign Exchange Track

DES495	Special Studies in Digital Engineering I	3(3-0-6)
DES497	Special Studies in Digital Engineering III	2(2-0-4)
XXXxxx	Free Elective	3(x-x-x)
XXXxxx	Free Elective	3(x-x-x)
	Sub-Total	**11(x-x-x)**

3) Extended Training Track

DES499	Extended Digital Engineering Training	6(0-40-0)
	Sub-Total	**6(0-40-0)**

Course Descriptions

Numerical Code

For the engineering and technology courses, the following numerical codes are used.

- The first digit indicates the level of difficulty.
- The second digit indicates the course groups.

For common courses, the above codes do not apply.

The numbers after each course (e.g., 3(3-0-6)) represent the credits, lecture hours, laboratory/practice hours, and self study hours, respectively.

Prerequisite / Corequisite Requirements

It is the responsibility of the student to meet all prerequisite and corequisite requirements. Students may not be allowed to take a course if its prerequisites have not been satisfactorily passed. A corequisite course must be taken concurrently or must have been previously passed.

DES102 Object-oriented Programming 3(3-0-6)
Prerequisite: Have earned credits of ITS100 or consent of Head of School
Concepts of object oriented programming and introduction to software engineering principles. Topics include data structure fundamentals; abstraction; encapsulation; inheritance; polymorphism; overloading; pointer and reference variables; recursion and various important algorithms. Modeling and application with classes, member functions, constructors and destructors, public, private and protected access, static and non-static members, virtual functions and standard I/O.

DES103 Object-oriented Programming Laboratory 1(0-3-0)
Prerequisite: Have earned credits of ITS100 or consent of Head of School
Hands-on practice and experiments of topics on object-oriented programming.

DES201 Discrete Mathematics 3(3-0-6)
Prerequisite: None
Sets and Projections. Boolean algebras. Relations. Automation. Formal grammars. Graphs and algorithms.

DES221 Data Structures and Algorithms 3(3-0-6)
Prerequisite: Have earned credits of DES102 or consent of Head of School
Concepts of data structures; data structures and programming; basic data structures: stacks, queues, linked lists, trees, graphs, etc.; recursion; hash tables; sorting and searching algorithms.

DES227 Algorithms Design 3(3-0-6)
Prerequisite: Have earned credits of DES221 or consent of Head of School
Definitions of algorithm, analysis of algorithm, divide and conquer, dynamic programming, graph algorithms, greedy algorithms, state space searches, NP-completeness and intractability. Hands-on practice on algorithm design and implementation.

DES229 Human Computer Interface Design 3(3-0-6)
Prerequisite: Have earned credits of ITS100 or consent of Head of School
Design concepts of hardware and software interface. Overview of the trends in human interfaces design. Graphical user interface, interactive software design. Hardware technology for human interfaces.

DES231 Data Structures and Algorithms Laboratory 1(0-3-0)
Prerequisite: Have earned credits of or taking DES221 in the same semester or consent of Head of School
Hands-on practice and experiments of topics on data structures and algorithms

DES232 Introduction to Data Communications 3(3-0-6)
Prerequisite: None
An overview of basic knowledge related to the process of data exchange between computers. Topics include analog and digital data transmission systems, various network topologies, client-server models, and structure/mechanism of the 5-layer simplified OSI model: application, transport, network, data-link, and physical layers.

DES300 Digital Engineering Training 1(0-40-0)
Prerequisite: Junior standing or consent of Head of School
Practical training in the private sector or governmental departments in the field of Digital Engineering. Not less than 240 hours during the summer vacation of the third year. Students must submits a report to his/her supervisor who will decide for the final grade of either satisfactory (S) or unsatisfactory (U)

DES321 Management Information Systems 3(3-0-6)
Prerequisite: Have earned credits of ITS100 or consent of Head of School
Structure and design of computer-based information systems. Topics included are computer hardware and software, database models, database management systems, system analysis, design and implementation.

DES322 Digital Business Experience 1(0-3-0)
Prerequisite: None
Hands-on practice of design and development of business-oriented applications.

DES323 Multi-platform Software Development 3(3-0-6)
Prerequisite: None
Multi Platform software development explores the newest technology for software development which do not target a specific platform, but shows concepts and APIs that can be used and worked on any major platforms. Web and Cross Platform Development concept, UI & UX Design Fundamentals, Agile Development, API, visual design, Backend Integration, and usability testing, cross-platform testing.

DES324 Entrepreneurship for Digital Business 3(3-0-6)
Prerequisite: None
The emergence of the digital economy has unlocked new opportunities for entrepreneurs, leading to the creation of new business models, innovations and value in data driven sectors. This course will give students to understand the nature of business development in the context of new business startups. Also understand the concepts of innovation and creativity and the roles that both play in entrepreneurship and business development. Students learn the essential attributes of an entrepreneur and develop a business plan for their startup firm then present this plan in a business pitch. Students will also explore different kinds of IT startup and traditional IT business through case studies as well as examines digital marketing strategy, implementation and executional considerations for BtoB and BtoC through digital channels and platforms.

DES329 System Analysis and Design 3(3-0-6)
Prerequisite: Have earned credits of ITS100 or consent of Head of School
Software models and software modeling methodologies. Basic abstraction mechanisms in software modeling. Modeling techniques, process, and languages. Software development process. Object-oriented system analysis and design. Hands-on practice on software development process and system analysis and design.

DES331 Computer Network Architectures and Protocols 3(3-0-6)
Prerequisite: None
Network models; OSI layers; transmission media; local area networks; design concepts of protocols; routing algorithms; applications of networks.

DES332 Computer and Network Security 3(3-0-6)
Prerequisite: None
Principles of building secure computer and network systems. Topics include security knowledge, software and network security. Security knowledge: security and privacy, threats and attacks, basic cryptography and encryption, authentication, digital signature, security management. Software security: operating system holes, database security, trusted and malicious software. Network security: firewalls, intrusion detection systems, Internet security protocols, Denial-of Service attacks, web and mobile security.

DES342 Computer Animation 3(2-3-4)
Prerequisite: Have earned credits of CSS221 or consent of Head of School
Introduction to techniques for computer animation such as keyframing, procedural methods, motion capture, and simulation. Overview of story-boarding, scene composition, lighting and sound track generation. 2D & 3D images and animations application software.

DES352 Networking Laboratory 1(0-3-0)
Prerequisite: Have earned credits of DES232 or CSS331 or consent of Head of School
Hands-on practice with the administration of computer networks and the development of computer network applications. Topics include: configuring network interfaces; designing and building switched and routed networks; monitoring network activities; and programming client/server applications.

DES400 Project Development 1(0-3-0)
Prerequisite: Senior standing or consent of Head of School
Practical projects or problems in Digital Engineering for individual students or groups of students under supervision of faculty members. Students are required to submit and present the project proposal to their project committee appointed by the school.

DES403 Digital Engineering Project 5(0-15-0)
Prerequisite: Senior standing or consent of Head of School
Practical projects or problems in Digital Engineering for individual student or group of students under supervision of faculty members. Students are required to submits and present the project report to their project committee appointed by the school.

DES412 Tele-services and Services Architecture 3(3-0-6)
Prerequisite: Have earned credits of or taking DES331 in the same semester or consent of Head of School
In modern telecommunications, service providers experience market expansion and changes in service provisioning technologies. This course aims at presenting students with an architectural foundation, which is based on the convergence of computer, telecommunication, an digital content technologies. Topics include Intelligent Networks, Common Object Request Broker Architecture (CORBA), and common service architectures available in several telecommunication standards.

DES413 Internet Technologies and Applications 3(3-0-6)
Prerequisite: Have earned credits of or taking DES331 in the same semester or consent of Head of School
An overview of Internet technologies and applications. Topics to be covered include TCP/IP first generation (IPv4), TCP/IP new generation (IPv6), integration with ATM, new infrastructures (e.g., Internet 2, gigapops, IP over SONET, and IP over WDM), IP telephony, video over IP, multimedia applications over IP.

DES421 Location-based Services and Digital Mapping 3(3-0-6)
Prerequisite: None
This course describe a comprehensive picture of the Location-based Services(LBS) world and cover key technologies, key markets, vertical industries, applications, solutions, value chain and key stakeholders. This course provides an introduction to digital mapping and location technologies overview, Satellite based location methods (GNSS), Mapping and Navigation

DES422 Business Application Development 3(3-0-6)
Prerequisite: None
Business domains analysis (healthcare, financial, etc.), business application architecture, business requirement analysis, business process modeling and visualization, application design for business domain, user experience analysis and design, design thinking for business solution improvement.

DES423 Applied Machine Learning and AI 3(3-0-6)
Prerequisite: None
Introduction to Machine Learning and Artificial Intelligence. Data and Models. Basic Concepts: Generalization, Error Functions, Error Minimization. Classification: Memory based methods, Decision Trees, Naive Bayes, Artificial Neural Networks, Support Vector Machines. Regression: Linear Regression, Logistic Regression, Dimensionality Reduction. Clustering: K-means, Simple Gaussian Mixture Models, Hierarchical Clustering. Association: Correlation, Association Rule Mining. Model Ensemble Techniques: Bagging, Boosting, Stacking, Co-training. Performance Evaluation. Artificial Intelligence, Human-Computer Interaction (HCI), Intelligent Information Systems Technologies, Natural Language Processing, Simulation and Modelling, Theoretical Computing. Artificial Intelligence Component: Knowledge Representation, Problem Solving, Reasoning, Planning, Basic and Advanced Search Algorithms, Pattern Recognition, Fuzzy Logic. AI Applications: Natural Language Understanding, Computer Vision, Automatic Programming, Intelligent Signal Processing.

DES424 Cloud-based Application Development 3(3-0-6)
Prerequisite: None
A cloud application, or cloud app, is a software program where cloud-based and local components work together. Cloud-based Application Development is a project based learning where students will learn the latest cloud computing technologies and integrate the technologies for a software or an app. , Introduction to cloud based technology, latest cloud technology, cloud storage, cloud server, cloud API, cloud API consumption, cloud-based authentication, data transfer security.

DES425 Electronic Commerce 3(3-0-6)
Prerequisite: None
The course will introduce students to the underlying economic aspects of the electronic marketplace in order to provide them with an understanding of its foundations for the development of new business models. Topics included are electronic commerce and the Internet, characteristics of digital products and processes, product information, market efficiency, copyright protection, and electronic payment systems.

DES426 Business Innovation 3(3-0-6)
Prerequisite: None
This course provides an overview and discussion of Design Thinking Principles and Service Science concepts for developing better products, services, processes, strategies, spaces, architecture, and experiences for customers-centric organization. Design Thinking helps organization to develop practical and innovative solutions for their problems. Design Thinking and Service Science are essential knowledge for transforming traditional business to human-focused, prototype-driven and service-oriented business. This course will help students to develop a solid understanding of the fundamental concepts of Design Thinking, Service Science and Service Dominant Logic (SDL) and how to apply these multi-disciplinary knowledge for service-oriented business innovation.

DES427 Mobile Application Programming 3(3-0-6)
Prerequisite: Have earned credits of ITS 100 or consent of Head of School
Problem-based learning; principles of mobile application development; programming languages, for mobile devices, such as JAVA, .NET, C/C++, Object-C; syntax and library usage; hand-on practice on a suitable software development kit (SDK); current and future trends of mobile applications.

DES428 Web Services and Service Architecture 3(3-0-6)
Prerequisite: Have earned credits of DES331 or DES329 or consent of Head of School
This course aims at presenting students with an architectural foundation of software as Web services, basing on the convergence of computer, communication and digital content. Topics include notations, models and specifications for designing service-based distributed software systems. Students will acquire a clear understanding of the main types of established service design elements and technologies such as REST services, SOAP services.

DES429 Accounting Information Systems 3(3-0-6)
Prerequisite: Have earned credits of ITS100 or consent of Head of School
An introduction to information systems for accounting and finance, including their role, in identifying, recording, and classifying financial transactions; characteristics of various types of accounts; accounting principles and concepts for measuring financial transactions; preparation of financial statements. Also covers financial analysis and the basic principles of financial management in the allocation and acquisition of funds.

DES431 Big Data Analytic 3(3-0-6)
Prerequisite: None
A process of examining and collecting large data sets to uncover hidden patterns, unknown correlations, market trends, customer preferences and other useful business information. This course brings together several key information technologies such as AI, machine learning and deep Learning technologies for manipulating, storing, and analyzing big data.

DES432 Statistics and Data Modeling 3(3-0-6)
Prerequisite: None
Statistical methods and probability for data analytics, data collection, analysis of data, interpretation of data, data model and visualization, data classification, probability distributions, statistical significance, hypothesis testing, regression analysis, data simulation and analysis using statistical software.

DES433 Data Visualization 3(3-0-6)
Prerequisite: None
Value of Visualization. Data and Image Models. Exploratory Data Analysis. Multidimensional Data. Graphical Perception. Visualization Software. Visualization of categorical data, time series data, multiple variables, geospatial data. Interactive visualizations, Interaction, and Animation. Effective Space Design: Color, Dashboard design, Web-based Visualizations. Design Critiques. Exploratory Visualization. Narrative with Data. Text Visualization. Visualization Evaluation.

DES434 Data Mining and Machine Learning 3(3-0-6)
Prerequisite: None
Introduction to data mining and machine learning; including principles, algorithms, implementations, and applications of data mining and machine learning. Data mining tasks; including characterization, association mining, classification, and clustering. Statistical decision theory; including adaptive classifiers, supervised and unsupervised learning, feature extraction, and decision units. Techniques for image and speech processing, text mining, and remote sensing.

DES442 Entrepreneurship for IT Business Development 3(3-0-6)
Prerequisite: None
Technology viability assessment, legal issues associated with forming a new company, competitive positioning, market analysis and market opportunity assessment, product life-cycle planning, marketing strategy, organization management, intellectual property management, patenting, technopreneurship, business plan, venture capital, entrepreneurial ethics.

DES443 Business Process Model and Management 3(3-0-6)
Prerequisite: None
This course provides an overview and discussion of the principles, concepts and techniques required to transform business from a traditional, functional organization to a process-centric organization. The course introduces a systematic approach and methodology for planning, monitoring, measuring and managing organizational business process performance and for redesigning and improving specific processes. The students will understand the value and benefits of business process management, the principles of business process management and how to apply them. Business Process Model and Notation (BPMN) will be used as a standard language for process analysis and design, process reengineering, process improvement and process automation. Examples and exercises of process model and process management in this course include financial, accounting, human resource management, CRM processes, etc.

DES481 Topics in Hardware and Communications I 3(3-0-6)
Prerequisite: Consent of Head of School
Topics of current interest in Hardware and Communications.

DES482 Topics in Hardware and Communications II 3(3-0-6)
Prerequisite: Consent of Head of School
Topics of current interest in Hardware and Communications.

DES483 Topics in Hardware and Communications III 3(3-0-6)
Prerequisite: Consent of Head of School
Topics of current interest in Hardware and Communications.

DES484 Topics in Software Technology I 3(3-0-6)
Prerequisite: Consent of Head of School
Topics of current interest in Software Technology.

DES485 Topics in Software Technology II 3(3-0-6)
Prerequisite: Consent of Head of School
Topics of current interest in Software Technology.

DES486 Topics in Software Technology III 3(3-0-6)
Prerequisite: Consent of Head of School
Topics of current interest in Software Technology.

DES487 Topics in Computer Information Systems I 3(3-0-6)
Prerequisite: Consent of Head of School
Topics of current interest in Computer Information Systems.

DES488 Topics in Computer Information Systems II 3(3-0-6)
Prerequisite: Consent of Head of School
Topics of current interest in Computer Information Systems.

DES489 Topics in Computer Information Systems III 3(3-0-6)
Prerequisite: Consent of Head of School
Topics of current interest in Computer Information Systems.

DES495 Special Studies in Digital Engineering I 3(3-0-6)
Prerequisite: None
Special study on current topics related to Digital Engineering.

DES496 Special Studies in Digital Engineering II 3(3-0-6)
Prerequisite: None
Special study on current topics related to Digital Engineering.

DES497 Special Studies in Digital Engineering III 2(2-0-4)
Prerequisite: None
Special study on current topics related to Digital Engineering.

DES499 Extended Digital Engineering Training 6(0-40-0)
Prerequisite: None
Prerequisite: Senior standing or consent of Head of School
Extensive on-the-job training of at least 16 weeks at a selected organization that provides digital engineering services - an individual comprehensive research or practical project related to the training must be intensively conducted under close supervision of faculty members and supervisors assigned by the training organization. At the end of the training, the student must submit a report of the project and also give a presentation.