

COMPUTER ENGINEERING – SECOND MAJOR IN INNOVATION & DESIGN



Technopreneur

FOR COHORT AY2021/2022 ONWARDS	MC
Common Curriculum	60
GESS Singapore Studies	4
GEC Cultures and Connections	4
GEN Communities and Engagement	4
ES2531 Critical Thinking and Writing	4
CS1010 Programming Methodology	4
GEA1010 Quantitative Reasoning with Data	4
DTK1234 Design Thinking	4
EG1311 Design and Make	4
IE2141 Systems Thinking and Dynamics	4
EE2211 Introduction to Machine Learning	4
EG2501 Liveable Cities Creating Narratives	4
PF1101 Fundamentals of Project Management	4
CG4002 Computer Engineering Capstone Project	8
Major Requirements	60
MA1511 Engineering Calculus	2
MA1512 Differential Equations for Engineering	2
MA1508E Linear Algebra for Engineering	4
EG2401A Engineering Professionalism	2
CP3880 Advanced Technology Attachment Programme or EG3611 Industrial Attachment	12 or 10
CG1111A Engineering Principles and Practice I	4
CG2111A Engineering Principles and Practice II	4
CS1231 Discrete Structures	4
CG2023 Signals & Systems	4
CG2027 Transistor-level Digital Circuits	2
CG2028 Computer Organization	2
CG2271 Real-time Operating Systems	4
CS2040C Data Structures and Algorithms	4
CS2113 Software Engineering & Object-Oriented Programming	4
EE2026 Digital Design	4
EE4204 Computer Networks	4
Second Major in Innovation & Design	40
Group A (select 1 module): User-Centered Collaborative Design	4
EG2201A User-Centred Collaborative Design	4
EG2310 Fundamentals of Systems Design	4
Group B (select 1 module): Case Studies in Innovation	4
EG2301 Case Studies in Innovation	4
EG2311 Introduction to Space Systems	4
EG2606B Independent Work	4
Group C: Innovation & Enterprise electives (select modules worth 8 MC)	8
Projects	24
EG3301R DCP Project	12
#EG4301 DCP Dissertation / EG4301A Ideas to Start-up	12
Refer to https://www.eng.nus.edu.sg/idp/academics/idp-second-major-cohort-ay2021-2022/ for more details	
*Other Unrestricted Electives	8
TOTAL	160
#The 12 MCs for EG4301/EG4301A are counted towards 8 MCs for the Integrated Project requirement in the Common Curriculum while 4 MCs are counted as Unrestricted Electives.	

*The listed modules are subject to change.

ELECTRICAL ENGINEERING – SECOND MAJOR

Technopreneur

FOR COHORT AY2021/2022 ONWARDS	MC
Common Curriculum	60
GESS Singapore Studies	4
GEC Cultures and Connections	4
GEN Communities and Engagement	4
ES2531 Critical Thinking and Writing	4
CS1010E Programming Methodology	4
GEA1000 Quantitative Reasoning with Data	4
DTK1234 Design Thinking	4
EG1311 Design and Make	4
IE2141 Systems Thinking and Dynamics	4
EE2211 Introduction to Machine Learning	4
EG2501 Liveable Cities Creating Narratives	4
PF1101 Fundamentals of Project Management	4
EE4002D Design Capstone OR EE4002R Research Capstone (select 1)	8
Major Requirements	60
MA1511 Engineering Calculus	2
MA1512 Differential Equations for Engineering	2
MA1508E Linear Algebra for Engineering	4
EG2401A Engineering Professionalism	2
EE1111A Electrical Engineering Principles and Practice I	4
EE2111A Electrical Engineering Principles and Practice II	4
EE2012 Analytical Methods in Electrical and Computer Engineering	4
EE2023 Signals and Systems	4
EE2026 Digital Design OR EE2028 Microcontroller Programming and Interfacing (select 1)	4
EE2027 Electronic Circuits	4
EE2022 Electrical Energy Systems	4
PC2020 Electromagnetics for Electrical Engineers	4
EG3611A Industrial Attachment	10
Technical Electives (select 2 modules from the list of Technical Elective modules, see next page)	8
Second Major in Innovation & Design	40
Group A: User-Centred Collaborative Design (select 1 module)	4
EG2201A User-Centred Collaborative Design	4
EG2310 Fundamentals of Systems Design	4
Group B: Case Studies in Innovation (select 1 module)	4
EG2301 Case Studies in Innovation	4
EG2311 Introduction to Space Systems	4
EG2606B Independent Work	4
Group C: Innovation & Enterprise electives (select modules worth 8 MC)	8
Projects	24
EG3301R DCP Project	12
#EG4301 DCP Dissertation / EG4301A Ideas to Start-up	12
Refer to https://www.eng.nus.edu.sg/idp/academics/idp-second-major-cohort-ay2021-2022/ for more details	12
Other Unrestricted Electives	8
TOTAL	160
#The 12 MCs for EG4301/EG4301A are counted towards 8 MCs for the Integrated Project requirement in the Common Curriculum while 4 MCs are counted as Unrestricted Electives.	



List of Technical Elective modules:	
<p><u>Foundation</u></p> <ul style="list-style-type: none"> • EE3131C Communication Systems • EE3408C Integrated Analog Design • EE3331C Feedback Control Systems • EE3431C Microelectronics Materials & Devices • EE3731C Signal Analytics • EE3104C Introduction to RF and Microwave Systems & Circuits <p><u>Communications & Networks</u></p> <ul style="list-style-type: none"> • EE4204 Computer Networks • EE4205 Quantum Communication and Cryptography • EE4210 Network Protocols and Applications • EE4211 Data Science for the Internet of Things • EE4802/IE4213 Learning from Data <p><u>Integrated Circuits & Embedded Systems</u></p> <ul style="list-style-type: none"> • CG3207 Computer Architecture • EE4407 Analog Electronics • EE4218 Embedded Hardware System Design • EE4415 Integrated Digital Design <p><u>Control, Intelligent Systems & Robotics</u></p> <ul style="list-style-type: none"> • EE3305/ME3243 Robotic System Design • EE4302 Advanced Control Systems • EE4303 Industrial Control Systems • EE4305 Fuzzy/Neural Systems for Intelligent Robotics • EE4307 Control Systems Design and Simulation • EE4308 Autonomous Robot Systems • EE4309 Robot Perception 	<p><u>Microelectronic Technologies & Devices</u></p> <ul style="list-style-type: none"> • EE4409 Modern Microelectronic Devices & Sensors • EE4435 Modern Transistors and Memory Devices • EE4436 Fabrication Process Technology • EE4437 Photonics – Principles and Applications • EE4438 Solar Cells and Modules <p><u>Power & Energy Systems</u></p> <ul style="list-style-type: none"> • EE4501 Power System Management & Protection • EE4502 Electric Drives and Control • EE4503 Power Electronics for Sustainable Energy Technologies • EE4509 Silicon Micro systems • EE4511 Renewable Generation and Smart Grid • EE4513 Electric Vehicles and their Grid Integration <p><u>Signal Analysis & Machine Intelligence</u></p> <ul style="list-style-type: none"> • EE4212 Computer Vision • EE4704 Image Processing and Analysis • EE4705 Human-Robot Interaction <p><u>Microwave & RF</u></p> <ul style="list-style-type: none"> • EE4101 RF Communications • EE4104 Microwave Circuits and Devices • EE4112 Radio Frequency Design and Systems <p><u>General</u></p> <ul style="list-style-type: none"> • EE3031 Innovation & Enterprise I • EE4031 Intellectual Property: Harnessing Innovation (2 MC) • EE4032 Blockchain Engineering (2 MC)

*The listed modules are subject to change.