MASTER LIST OF CEG TECHNICAL ELECTIVE MODULES available in AY2014/15

(For CEG students of AY2011 intake and onwards)

Modules highlighted in green are NOT part of CEG core; students have to take as UEM to meet pre-requisite
In red fonts: pending approval/revision
In green fonts: amendments

	TECHNICAL ELECTIVE MODULES	Hrs per week				CA	MC	SEM	PRE-/CO- REQ
		LEC	TUT	LAB	PREP				
	COMMUNICATIONS & NETWORKING								
Breadth	CG3204L Computer Networks Laboratory Co-list under 'embedded computing'	1	0	2	4		4~	~~(1&2)#~~ 2	Pre: EE3204 Anti: CS2105, CS3103, CS3103L
	~~#Will be offered only if minimum class size (10 students) is met by CORS Round 1~~								
	~CG3204L: MCs (sem 1, AY12/13 & prior) = 3; MCs (sem 2, AY12/13 & onwards) = 4								
	EE3131C Communication Systems	2	1	0.5	6.5		4	1&2	Pre: EE2009/EE2023 Anti: EE3103
Depth	CS4222 Wireless Computing & Sensor Networks Co-list under 'embedded computing'	2	0	2	4 2		4	2	Pre: CS3103/CG3204L
	CS4274 Mobile and Multimedia Networking Co-list under 'embedded computing'	2	1	2	3 2		4	1	Pre: CS3103/CG3204L
	EE4210 Computer Communication Networks II Co-list under 'embedded computing' & 'large-scale computing'	2.5	0.5	0	7.5	40%	4	2	Pre: EE3204/CS2105 Anti: CS3103
	EE4113 Digital Communications & Coding	2.5	0.5	0.5	6.5	40%	4	1	Pre: (EE2012/ST2334) & EE3103/EE3131C Anti: EE4102/EE4103
	EE4114 Optical Communications	2.5	0.5	0.5	6.5	30%	4	2	Pre: EE3103/EE3131C
	EMBEDDED COMPUTING								
Breadth	CG3204L Computer Networks Laboratory Co-list under 'comms & networking'	1	0	2	4		**4~**	~~(1&2)#~~ 2	Pre: EE3204 Anti: CS2105, CS3103, CS3103L
	~~#Will be offered only if minimum class size (10 students) is met by CORS Round 1~~								
	~CG3204L: MCs (sem 1, AY12/13 & prior) = 3; MCs (sem 2, AY12/13 & onwards) = 4								
	CS2107 Introduction to Information & System Security Co-list under 'large-scale computing'	2	1	0	3 4		4	2	Pre: CS1010 or its equivalence
	CS3218 Multimodal Processing in Mobile Platforms	2	1	1	2 4		4	2	Pre: (MA1521 and MA1101R and CS1020) or their equivalents
	CS3235 Computer Security Module title change wef AY11/12 Co-list under 'large-scale computing'	2	1	0	3 3		4	1	Pre: (CS2105/EE3204) & (CS2106/CG2271) & CS2107
Depth	CS4222 Wireless Computing & Sensor Networks Co-list under 'comms & networking'	2	0	2	4 2		4	2	Pre: CS3103/CG3204L
	CS4274 Mobile and Multimedia Networking Co-list under 'comms & networking'	2	1	2	3 2		4	1	Pre: CS3103/CG3204L
	EE4210 Computer Communication Networks II Co-list under 'comms & networking' & 'large-scale computing'	2.5	0.5	0	7.5	40%	4	2	Pre: EE3204/CS2105 Anti: CS3103
	EE4214 Real-time Embedded Systems Co-list under 'system-on-a-chip design'	2	0.5	0.5	6	50%	4	~~1~~ 2	Pre: CG2007/EE2007/EE2024

	TECHNICAL ELECTIVE MODULES	Hrs per week				CA	MC	SEM	PRE-/CO- REQ
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	EE4218 Embedded Hardware System Design Co-list under 'system-on-a-chip design'	2	0.5	1	6.5	60%	4	~~2~~ 1	Pre: EE2006/EE2020
	EE4415 Integrated Digital Design Co-list under 'system-on-a-chip design'	2	0.5	0.5	7	30%	4	2	Pre: EE2006/EE2020
	LARGE-SCALE COMPUTING								
Breadth	CS2010 Data Structures & Algorithms II Co-list under 'intelligent systems'	2	1	1	3 3		4	1&2	Pre: CS1020/CS1020E/ CG1103 Anti: CG1102, CS1102, CS1102C, CS1102S, CS2020
	CS2102 Database Systems	2	1.5	0.5	3 Proj 3 prep		4	1&2	Pre: (CS1020 or its equivalent) & (CS1231/MA1100) Anti: CS2102S, IT2002
	CS2107 Introduction to Information & System Security Co-list under 'embedded computing'	2	1	0	3 4		4	2	Pre: CS1010 or its equivalence
	CS3211 Parallel and Concurrent Programming	2	1	0	3 Proj 3 prep		4	2	Pre: CS2106/CG2271
	CS3235 Computer Security Module title change wef AY11/12 Co-list under 'embedded computing'	2	1	0	3 3		4	1	Pre: (CS2105/EE3204) & (CS2106/CG2271) & CS2107
Depth	CS3223 Database Systems Implementation	2	1	0	3 Proj 3 prep		4	2	Pre: (CS2010 or its equivalent) & (CS2102/CS2102S)
	CS4221 Database Design	3	0	0	3 Proj 4 prep		4	~~1~~ 2	Pre: CS2102/CS2102S
	CS4223 ~~Parallel Computer~~ Multi-core Architecture Module title change wef AY13/14 Co-list under 'system-on-a-chip design'	2	1	0	3 4		4	1	(CS2106/CG2271) & (CS3210/CS3220/CG3207)
	CS4224 Distributed Database	2	1	0	3 4		4	1	Pre: CS2102
	CS4345 General-Purpose Computation on GPU	2	0	0	4 4		4	1	Pre: CS3241
	EE4210 Computer Communication Networks II Co-list under 'comms & networking' & 'embedded computing'	2.5	0.5	0	7.5	40%	4	2	Pre: EE3204/CS2105 Anti: CS3103
	INTELLIGENT SYSTEMS								
Breadth	CS2010 Data Structures & Algorithms II Co-list under 'large-scale computing'	2	1	1	3 3		4	1&2	Pre: CS1020/CS1020E/ CG1103 Anti: CG1102, CS1102, CS1102C, CS1102S, CS2020
	CS3240 Interaction Design Module title change wef AY12/13, sem 2 Co-list under 'interactive digital media'	2	1	1	3 Proj 3 prep		4	1&2	Pre: (CS1020 or its equivalent) or NM2217
	CS3243 Introduction to Artificial Intelligence	2	1	0	3 4		4	2	Pre: (CS2010 or its equivalent) & (CS1231/MA1100)
	CS3244 Machine Learning	2	1	0	3 3		4	1	Pre: (CS2010 or its equivalent) & (ST1232/ST2131/ST2132 /ST2334)
	EE3206 Introduction to Computer Vision and Image Processing	2.5	1.0	0.5	6	20%	4	1	Pre: EE2009/EE2023 Anti: CS4243

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	Co-list under 'interactive digital media'								
	EE3331C Feedback Control Systems Co-list under 'interactive digital media'	3	1	0.5	5.5	50%	4	1&2	Pre: EE2023 Anti: EE2010
Depth	CS4248 Natural Language Processing	3	0	0	3 4		4	1	Pre: (CS3243/CS3245) and (ST1232/ ST2131/ST2334)
	EE4212 Computer Vision Co-list under 'interactive digital media'	2.5	0.5	0	7	40%	4	2	Pre: EE3206/EE3731C Anti: CS4243
	EE4213 Image Processing Co-list under 'interactive digital media'	2	0.5	0	7.5	45%	4	2	Pre: EE3206 Anti: CS4243
	EE4305 Introduction to Fuzzy/Neural Systems	2.5	0.5	0.5	6.5	30%	4	1	Pre: EE2023
	EE4306 Distributed Autonomous Robotic Systems	1.5	0	0	5 proj 3.5 prep	100%	4	2	Pre: EE2010/EE3331C
	EE4307 Control Systems Design and Simulation	1.5	0	0	5 proj 3.5prep	100%	4	2	Pre: EE2010/EE3331C
	INTERACTIVE DIGITAL MEDIA								
Breadth	CS3240 Interaction Design Module title change wef AY12/13, sem 2 Co-list under 'intelligent systems'	2	1	1	3 Proj 3 prep		4	1&2	Pre: (CS1020 or its equivalent) or NM2217
	CS3241 Computer Graphics	2	1	0	3 Proj 3 prep		4	1&2	Pre: CS1020 or its equivalent
	CS3242 3D Modeling and Animation (re-coded from CS4342) Module code change wef AY12/13, sem 2	2	1	1	3 3		4	2	Pre: CS3241 & (PC1221/H2 Physics or equiv) & (MA1521/MA1505) & (MA1101R/MA1506) Anti: CS4342
	CS3247 Game Development (re-coded from CS4213) Module code change wef AY12/13, sem 2	2	1	1	3 3		4	2	Pre: CS3241 & (PC1221/H2 Physics or equiv) Anti: CS4213
	CS3249 User Interface Development Module title change wef AY12/13, sem 2	2	1	0	4 Proj 3 prep		4	2	Pre: ~~CS1020 or its equivalent~~ CS2103/CS2103T
	EE3206 Introduction to Computer Vision and Image Processing Co-list under 'intelligent systems'	2.5	1.0	0.5	6	20%	4	1	Pre: EE2009/EE2023 Anti: CS4243
	EE3331C Feedback Control Systems Co-list under 'intelligent systems'	3	1	0.5	5.5	50%	4	1&2	Pre: EE2023 Anti: EE2010
	EE3701 Digital Media Technologies	2	1	0	7	~~40%~~ 100%	4	ST1	Pre: CS1101C/CS10101E/ CG1101
Depth	CS4247 Graphics Rendering Techniques	3	0	0	3 4		4	2	Pre: CS3241
	EE4212 Computer Vision Co-list under 'intelligent systems'	2.5	0.5	0	7	40%	4	2	Pre: EE3206/EE3731C Anti: CS4243
	EE4213 Image Processing Co-list under 'intelligent systems'	2	0.5	0	7.5	45%	4	2	Pre: EE3206 Anti: CS4243
	ME4245 Robot Kinematics, Dynamics and Control	3	1	0	0.5 5.5	30%	4	1	Pre: EE2010/EE3331C (for ECE) MA1506/ME2142 (for ME)
	SYSTEM-ON-A-CHIP DESIGN								
Breadth	EE3407 Analog Electronics	2.5	0.5	0.5	6.5	20%	4	1&2	Pre: EE2021
	EE3408C Integrated Analog Design	2.5	0.5	0.5	6.5	40%	4	1	Pre: EE2021

TECHNICAL ELECTIVE MODULES		Hrs per week				CA	MC	SEM	PRE-/CO- REQ
		LEC	TUT	LAB	PREP				
									Anti: EE3408
Depth	CS4223 ~~Parallel Computer~~ Multi-core Architecture Module title change wef AY13/14 Co-list under 'large-scale computing'	2	1	0	3 4		4	1	(CS2106/CG2271) & (CS3210/CS3220/CG3207)
	EE4214 Real-time Embedded Systems Co-list under 'embedded computing'	2	0.5	0.5	6	50%	4	~~1~~ 2	Pre: CG2007/EE2007/EE2024
	EE4218 Embedded Hardware System Design Co-list under 'embedded computing'	2	0.5	1	6.5	60%	4	~~2~~ 1	Pre: EE2006/EE2020
	EE4410A Integrated Circuit Design	1	0	4	5	100%	4	~~2~~ Not offered in A1415	Pre: EE3408C Anti-req: EE4410
	EE4415 Integrated Digital Design Co-list under 'embedded computing'	2	0.5	0.5	7	30%	4	2	Pre: EE2006/EE2020
	EE4505 Power Semiconductor Devices & ICs	2	0.5	0.25	7.25	60%	4	1	Pre: EE2021 or equiv

Note:
- Other 3000/4000 modules hosted by CS or ECE may be used as fulfilling CEG Technical Elective (TE) requirements. Generally, a level 3000 module will count as CEG TE Breadth, while a 4000 level module will count as CEG TE Depth.
- The following level 2000 modules may count as CEG TE Breadth:
CS2104 Programming Language Concepts
CS2281 Programming in Unix
EE2011 Engineering Electromagnetics
EE2022 Electrical Energy Systems
IE2110 Operation Research I
IE2130 Quality Engineering I

"CS1010 or its equivalent" - This prerequisite clause refers to "CS1010 or CS1010E or CS1101 or CS1101C or CS1101S or CG1101 or CS1010FC".
"CS1020 or its equivalent" - This prerequisite clause refers to "CS1020 or CS1020E or CS2020 or CS1102 or CS1102C or CS1102S or CG1102 or CG1103".

"CS2010 or its equivalent" - This prerequisite clause means "CS2010 or CS2020 or CS1102 or CS1102C or CS1102S or CG1102".
Note: CG1103 is excluded from this clause i.e. AY10/11 intake and onwards will need to read additional module (i.e. CS2010) to satisfy the pre-req.

For CSxxxx modules, please refer to IVLE for CA component.
Offering semester and pre-requisites may change; please refer to Bulletin http://www.nus.edu.sg/registrar/nusbulletin/modulesearch.html.

The host department reserves the right to make final changes to any module on offer.

Module(s) added to the list (with reference to the previous revision) are tagged with <NEW>