Double Degree Programme in
Computer Science and Economics Curriculum Structure
Applicable to students matriculated in AY2020 and after

The BEng (CS) and BSocSci (Econs) is a 5-year double degree programme hosted by School of Computer Science and Engineering and the Economics Division of the School of Social Sciences (SSS). Students under this programme can opt to take the 10-week Professional Attachment or 20-week Professional Internship.

Polytechnic students may be exempted up to a total of 9 AUs in the following courses:

   a. Technical Elective I (Core elective, CZ4xxx courses) - 3 AUs
   b. Technical Elective 2 (Core elective, to be taken from CZ4xxx courses) – 3 AUs
   c. CZ1103 Introduction to Computational Thinking & Programming* (Core) - 3 AUs
      *subjected to passing the exemption test

Overview of AUs requirement

Option 1: 10-week Professional Attachment (PA)

Year of Study	Core (CS)	Core (ECON)	Major Prescribed Elective (MPE) (CS)	Major Prescribed Elective (MPE) (ECON)	General Education Requirement (GER) Core	Unrestricted Elective (UE)	Total
1	8	6			7		21
	12	6			4		22
2	15	3					18
	12	6					18
3	9			3	1	3	16
	7		3	3	2		15
	5						5
4	3	4	6	3			16
	8		6	3		2	19
5			3	12			15
				15			15
Total	**79**	**25**	**18**	**39**	**14**	**5**	**180**

Option 2: 20-week Professional Internship (PI)

Year of Study	Core (CS)	Core (ECON)	Major Prescribed Elective (MPE) (CS)	Major Prescribed Elective (MPE) (ECON)	General Education Requirement (GER) Core	Total
1	8	6			7	21
	12	6			4	22
2	15	3				18
	12	6				18
3	10			6		16
	6			12	2	20
4	3	4	9	3	1	20
	10					10
5			3	10		13
	8		6	8		22
Total	**84**	**25**	**18**	**39**	**14**	**180**

Option 1: 10-week Professional Attachment (PA)

Course Code and Title	Type (i.e. Core/ MPE/ GER core/ GER PE/UE)	No of Hours Per Week				AU	Pre-requisite / Remarks
		Lec / TEL	Tut	Lab/ Example class	Total		
YEAR 1 SEMESTER 1							
MH1810 Mathematics I	Core (CS)	2	1	-	3	3	-
EG0001 Engineers and Society#	GER core	2	1	-	3	3	
CZ1103 Introduction to Computational Thinking & Programming×	Core (CS)	2	0	2	4	3	-
CZ1113 Physics for Computing	Core (CS)	2	0	1	3	2	-
HE1001 Microeconomic Principles	Core (Econ)	2	1	-	3	3	-
HE1002 Macroeconomic Principles	Core (Econ)	2	1	-	3	3	
GC0001 Sustainability: Seeing Through The Haze	GER core	-	-	-	-	1	online course
HY0001 Ethics & Moral Reasoning	GER core	-	-	-	-	1	online course
HW0188 Engineering Communication	GER core	-	2	-	2	2	
TOTAL		**12**	**6**	**3**	**21**	**21**	

Course Code and Title	Type	Lec / TEL	Tut	Lab/ Example class	Total	AU	Pre-requisite / Remarks
YEAR 1 SEMESTER 2							
MH1812 Discrete Mathematics	Core (CS)	2	1	-	3	3	-
CZ1105 Digital Logic (Engineering Fundamentals 1)	Core (CS)	2	1	0.5	3.5	3	-
CZ1106 Computer Organisation and Architecture	Core (CS)	2	1	0.5	3.5	3	CZ1105 (can be taken concurrently)
Engineering Fundamentals 2	Core (CS)	2	1	-	3	3	-
HE1005 Intro to Probability & Statistical Inference	Core (Econ)	2	1	-	4	3	
HE2001 Intermediate Microeconomics	Core (Econ)	2	1	-	3	3	HE1001
CZ1115 Introduction to Data Science and Artificial Intelligence	GER core	2	0	2	4	3	CZ1103
ET0001 Enterprise & Innovation	GER core	-	-	-	-	1	online course
TOTAL		**14**	**6**	**3**	**24**	**22**	

Course Code and Title	Type (i.e. Core/ MPE/ GER core/ GER PE/UE)	No of Hours Per Week				AU	Pre-requisite / Remarks
		Lec / TEL	Tut	Lab/ Example class	Total		
YEAR 2 SEMESTER 1							
CZ1104 Linear Algebra for Computing	Core (CS)	2	1	1	4	3	MH1810
CZ1107 Data Structures and Algorithms	Core (CS)	2	1	0.5	3.5	3	CZ1103
CZ2100 Probability and Statistics for Computing	Core (CS)	2	1	-	3	3	MH1810
CZ2002 Object Oriented Design & Programming	Core (CS)	2	1	0.5	3.5	3	CZ1103
CZ2006 Software Engineering	Core (CS)	2	1	0.5	3.5	3	CZ2002 (can be taken concurrently)
HE2005 Principles of Econometrics	Core (Econ)	2	1	-	4	3	HE1005
TOTAL		**12**	**6**	**2.5**	**21.5**	**18**	

Course Code and Title	Type	Lec / TEL	Tut	Lab/ Example class	Total	AU	Pre-requisite / Remarks
YEAR 2 SEMESTER 2							
CZ2101 Algorithm Design and Analysis	Core (CS)	2	1	0.5	3.5	3	CZ1107, MH1812
CZ2005 Operating Systems	Core (CS)	2	1	0.5	3.5	3	CZ1106, CZ1107
CZ2007 Introduction to Databases	Core (CS)	2	1	0.5	3.5	3	CZ2101 (can be taken concurrently)
CZ3006 Net Centric Computing	Core (CS)	2	1	0.5	3.5	3	CZ1104, CZ2100
HE2002 Intermediate Macroeconomics	Core (Econ)	2	1	-	3	3	HE1002
HE3021 Intermediate Econometrics	Core (Econ)	2	1	-	3	3	HE2005 or at least an A grade in HE2004
TOTAL		**12**	**6**	**2**	**20**	**18**	

NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

School of Computer Science and Engineering

Course Code and Title	Type (i.e. Core/ MPE/ GER core/ GER PE/UE)	No of Hours Per Week				AU	Pre-requisite / Remarks
		Lec / TEL	Tut	Lab/ Example class	Total		
YEAR 3 SEMESTER 1							
CZ3005 Artificial Intelligence	Core (CS)	2	1	0.5	3.5	3	CZ1107, CZ1115, CZ2101
CZ4062 Computer Security	Core (CS)	2	1	0.5	3.5	3	CZ2005
CZ4031 Database System Principles	Core (CS)	2	1	0.5	3.5	3	CZ2007
Unrestricted Elective	UE	2	1	-	3	3	
Econs PE 1	MPE (Econ)	2	1	-	3	3	HE1005, HE2005
ML0003 Kickstart your Career Success	GER core					1	online course
TOTAL		**10**	**5**	**1.5**	**16.5**	**16**	

Course Code and Title	Type	Lec / TEL	Tut	Lab/ Example class	Total	AU	Pre-requisite / Remarks
YEAR 3 SEMESTER 2							
CZ3004 Multidisciplinary Design Project	Core (CS)	1	-	3	4	4	Year 3 standing
CZ3002 Advanced Software Engineering	Core (CS)	2	1	0.5	3.5	3	CZ2006
CZ4xxx Prescribed Elective 1[x]	MPE (CS)	2	1	0.5	3.5	3	
HW0288^ Engineering Communication	GER core	-	2	-	2	2	HW0188, Year 3 standing
Econs PE 2	MPE (Econ)	2	1	-	3	3	HE1005, HE2005
TOTAL		**7**	**5**	**4**	**16**	**15**	

^ Should there be insufficient vacancies, students will take Eng Comm in the following semester.

Course Code and Title	Type	Lec / TEL	Tut	Lab/ Example class	Total	AU	Pre-requisite / Remarks
YEAR 3 SPECIAL SEMESTER							
CZ3126 Professional Attachment	Core (CS)	-	-	-	-	5	ML0003, Year 3 standing
TOTAL		**-**	**-**	**-**	**-**	**5**	

NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

School of Computer Science and Engineering

Course Code and Title	Type (i.e. Core/ MPE/ GER core/ GER PE/UE)	No of Hours Per Week				AU	Pre-requisite / Remarks
		Lec / TEL	Tut	Lab/ Example class	Total		
YEAR 4 SEMESTER 1							
CZ4179 Final Year Project	Core (CS)	-	-	-	-	-	Final year standing
CZ3001 Advanced Computer Architecture	Core (CS)	2	1	0.5	3.5	3	CZ1106
CZ4xxx Prescribed Elective 2ˣ	MPE (CS)	2	1	0.5	3.5	3	
CZ4xxx Prescribed Elective 3	MPE (CS)	2	1	0.5	3.5	3	
HE4010 Singapore Economy in a Globalised World	Core (Econ)	2	2	-	4	4	HE2001, HE2002
Econs PE 3	MPE (Econ)	2	1	-	3	3	HE1005, HE2005
TOTAL		**10**	**6**	**1.5**	**17.5**	**16**	

YEAR 4 SEMESTER 2							
CZ4179 Final Year Project	Core (CS)	-	-	-	-	8	
CZ4xxx Prescribed Elective 4	MPE (CS)	2	1	0.5	3.5	3	
CZ4xxx Prescribed Elective 5	MPE (CS)	2	1	0.5	3.5	3	
Econs PE 4	MPE (Econ)	2	1	-	3	3	HE1005, HE2005
Unrestricted Elective	UE	1	-	-	1	2	
TOTAL		**7**	**3**	**1**	**11**	**19**	

Course Code and Title	Type (i.e. Core/ MPE/ GER core/ GER PE/UE)	No of Hours Per Week				AU	Pre-requisite / Remarks
		Lec / TEL	Tut	Lab/ Example class	Total		
YEAR 5 SEMESTER 1							
CZ4xxx Prescribed Elective 6	MPE (CS)	2	1	0.5	3.5	3	
Econs PE 5	MPE (Econ)	2	1	-	3	3	HE1005, HE2005
Econs PE 6	MPE (Econ)	2	1	-	3	3	HE1005, HE2005
Econs PE 7	MPE (Econ)	2	1	-	3	3	HE1005, HE2005
Econs PE 8	MPE (Econ)	2	1	-	3	3	HE1005, HE2005
TOTAL		**10**	**5**	**0.5**	**15.5**	**15**	

YEAR 5 SEMESTER 2							
Econs PE 9	MPE (Econ)	2	1	-	3	3	HE1005, HE2005
Econs PE 10	MPE (Econ)	2	2	-	4	4	HE1005, HE2005
Econs PE 11	MPE (Econ)	2	2	-	4	4	HE1005, HE2005
Econs PE 12	MPE (Econ)	2	2	-	4	4	HE1005, HE2005
TOTAL		**8**	**7**	**-**	**15**	**15**	

GRAND TOTAL (Year 1 to 5)	**180**

ˣ Exempted AUs for Polytechnic students with relevant diplomas

Option 2: 20-week Professional Internship (PI)

Course Code and Title	Type (i.e. Core/ MPE/ GER core/ GER PE/UE)	No of Hours Per Week				AU	Pre-requisite / Remarks
		Lec / TEL	Tut	Lab/ Example class	Total		
YEAR 1 SEMESTER 1							
MH1810 Mathematics I	Core (CS)	2	1	-	3	3	-
EG0001 Engineers and Society#	GER core	2	1	-	3	3	
CZ1103 Introduction to Computational Thinking & Programming×	Core (CS)	2	0	2	4	3	-
CZ1113 Physics for Computing	Core (CS)	2	0	1	3	2	-
HE1001 Macroeconomic Principles	Core (Econ)	2	1	-	3	3	
HE1002 Microeconomic Principles	Core (Econ)	2	1	-	3	3	-
GC0001 Sustainability: Seeing Through The Haze	GER core	-	-	-	-	1	online course
HY0001 Ethics & Moral Reasoning	GER core	-	-	-	-	1	online course
HW0188 Effective Communication	GER core	-	2	-	2	2	
TOTAL		**12**	**6**	**3**	**21**	**21**	

Course Code and Title	Type	Lec / TEL	Tut	Lab/ Example class	Total	AU	Pre-requisite / Remarks
YEAR 1 SEMESTER 2							
MH1812 Discrete Mathematics	Core (CS)	2	1	-	3	3	-
CZ1105 Digital Logic (Engineering Fundamentals 1)	Core (CS)	2	1	0.5	3.5	3	-
CZ1106 Computer Organisation and Architecture	Core (CS)	2	1	0.5	3.5	3	CZ1105 (can be taken concurrently)
Engineering Fundamentals 2	Core (CS)	2	1	-	3	3	-
HE1005 Intro to Probability & Statistical Inference	Core (Econ)	2	1	-	4	3	
HE2001 Intermediate Microeconomics	Core (Econ)	2	1	-	3	3	HE1001
CZ1115 Introduction to Data Science and Artificial Intelligence	GER core	2	0	2	4	3	CZ1103
ET0001 Enterprise & Innovation	GER core	-	-	-	-	1	online course
TOTAL		**14**	**6**	**3**	**24**	**22**	

NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

School of Computer Science and Engineering

Course Code and Title	Type (i.e. Core/ MPE/ GER core/ GER PE/UE)	No of Hours Per Week				AU	Pre-requisite / Remarks
		Lec / TEL	Tut	Lab/ Example class	Total		
YEAR 2 SEMESTER 1							
CZ1104 Linear Algebra for Computing	Core (CS)	2	1	1	4	3	MH1810
CZ1107 Data Structures and Algorithms	Core (CS)	2	1	1	4	3	CZ1103
CZ2100 Probability and Statistics for Computing	Core (CS)	2	1	-	3	3	MH1810
CZ2002 Object Oriented Design & Programming	Core (CS)	2	1	0.5	3.5	3	CZ1103
CZ2006 Software Engineering	Core (CS)	2	1	0.5	3.5	3	CZ2002 (can be taken concurrently)
HE2005 Principles of Econometrics	Core (Econ)	2	1	-	4	3	HE1005
TOTAL		**12**	**6**	**3**	**22**	**18**	

Course Code and Title	Type	Lec / TEL	Tut	Lab/ Example class	Total	AU	Pre-requisite / Remarks
YEAR 2 SEMESTER 2							
CZ2101 Algorithm Design and Analysis	Core (CS)	2	1	0.5	3.5	3	CZ1107, MH1812
CZ2005 Operating Systems	Core (CS)	2	1	0.5	3.5	3	CZ1106, CZ1107
CZ2007 Introduction to Databases	Core (CS)	2	1	0.5	3.5	3	CZ2101 (can be taken concurrently)
CZ2008 Computing Networks	Core (CS)	2	1	0.5	3.5	3	CZ1104, CZ2100
HE2002 Intermediate Macroeconomics	Core (Econ)	2	1	-	3	3	HE1002
HE3021 Intermediate Econometrics	Core (Econ)	2	1	-	3	3	HE2005 or at least an A grade in HE2004
TOTAL		**12**	**6**	**2**	**20**	**18**	

Course Code and Title	Type (i.e. Core/ MPE/ GER core/ GER PE/UE)	No of Hours Per Week				AU	Pre-requisite / Remarks
		Lec / TEL	Tut	Lab/ Example class	Total		
YEAR 3 SEMESTER 1							
CZ3004 Multidisciplinary Design Project	Core (CS)	1	-	3	4	4	CZ2101, CZ2006
CZ3005 Artificial Intelligence	Core (CS)	2	1	0.5	3.5	3	CZ1107, CZ1115, CZ2101
CZ4062 Computer Security	Core (CS)	2	1	0.5	3.5	3	CZ2005
Econs PE 1	MPE (Econ)	2	1	-	3	3	HE1005, HE2005
Econs PE 2	MPE (Econ)	2	1	-	3	3	HE1005, HE2005
TOTAL		**9**	**4**	**4**	**17**	**16**	
YEAR 3 SEMESTER 2							
CZ4031 Database System Principles	Core (CS)	2	1	0.5	3.5	3	CZ2007
CZ3002 Advanced Software Engineering	Core (CS)	2	1	0.5	3.5	3	CZ2006
HW0288 Engineering Communication	GER core	-	2	-	2	2	HW0188, Year 3 standing
Econs PE 3	MPE (Econ)	2	1	-	3	3	HE1005, HE2005
Econs PE 4	MPE (Econ)	2	1	-	3	3	HE1005, HE2005
Econs PE 5	MPE (Econ)	2	1	-	3	3	HE1005, HE2005
Econs PE 6	MPE (Econ)	2	1	-	3	3	HE1005, HE2005
TOTAL		**12**	**8**	**1**	**21**	**20**	

^ Should there be insufficient vacancies, students will take Eng Comm in the following semester.

Course Code and Title	Type (i.e. Core/ MPE/ GER core/ GER PE/UE)	No of Hours Per Week				AU	Pre-requisite / Remarks
		Lec / TEL	Tut	Lab/ Example class	Total		
YEAR 4 SEMESTER 1							
CZ3001 Advanced Computer Architecture	Core (CS)	2	1	0.5	3.5	3	CZ1106
CZ4xxx Technical Elective 1[x]	MPE (CS)	2	1	0.5	3.5	3	
CZ4xxx Technical Elective 2[x]	MPE (CS)	2	1	0.5	3.5	3	
CZ4xxx Technical Elective 3	MPE (CS)	2	1	0.5	3.5	3	
HE4010 Singapore Economy in a Globalised World	Core (Econ)	2	2	-	4	4	HE2001, HE2002
Econs PE 7	MPE (Econ)	2	1	-	3	3	HE1005, HE2005
ML0003 Kickstart your Career Success	GER core	-	-	-	-	1	online course
TOTAL		**12**	**7**	**2**	**21**	**20**	

Course Code and Title	Type					AU	Pre-requisite / Remarks
YEAR 4 SEMESTER 2							
CZ3179 Professional Internship	Core (CS)	-	-	-	-	10	ML0003, Year 3 standing
TOTAL		**-**	**-**	**-**	**-**	**10**	

Course Code and Title	Type (i.e. Core/ MPE/ GER core/ GER PE/UE)	No of Hours Per Week				AU	Pre-requisite / Remarks
		Lec / TEL	Tut	Lab/ Example class	Total		
YEAR 5 SEMESTER 1							
CZ4179 Final Year Project	Core (CS)	-	-	-	-	-	Final year standing
CZ4xxx Technical Elective 4	MPE (CS)	2	1	0.5	3.5	3	
Econs PE 8	MPE (Econ)	2	1	-	3	3	HE1005, HE2005
Econs PE 9	MPE (Econ)	2	1	-	3	3	HE1005, HE2005
Econs PE 10	MPE (Econ)	2	2	-	4	4	HE1005, HE2005
TOTAL		**8**	**5**	**0.5**	**13.5**	**13**	
YEAR 5 SEMESTER 2							
CZ4179 Final Year Project	Core (CS)	-	-	-	-	8	
CZ4xxx Technical Elective 5	MPE (CS)	2	1	0.5	3.5	3	
CZ4xxx Technical Elective 6	MPE (CS)	2	1	0.5	3.5	3	
Econs PE 11	MPE (Econ)	2	2	-	4	4	HE1005, HE2005
Econs PE 12	MPE (Econ)	2	2	-	4	4	HE1005, HE2005
TOTAL		**8**	**6**	**1**	**15**	**22**	

GRAND TOTAL (Year 1 to 5)	**180**

ˣ Exempted AUs for Polytechnic students with relevant diplomas