

**NUS DEPARTMENT OF MECHANICAL ENGINEERING**  
**Bachelor of Engineering (Robotics and Machine Intelligence)**

**Summary of RMI Course Requirements and Units (For students matriculating from AY2025/2026)**

UNIT REQUIREMENTS	Units	TERM	NOTES
<b>UNRESTRICTED ELECTIVE (UE) COURSES</b>	<b>40</b>		
<b>COMMON CURRICULUM REQUIREMENTS – see Annex A</b>	<b>40</b>		
<b>General Education (GE) Courses:</b>	<b>24</b>		
CDE2501 Sustainable Systems Liveable Cities	4		
Cultures and Connections (GEC)	4		
Communities and Engagement (GEN)	4		
ES2631 Critique and Communication of Thinking and Design	4		
CS1010E Programming Methodology	4		
GEA1000 Quantitative Reasoning with Data	4		
<b>Common Courses:</b>	<b>16</b>		
DTK1234 Design Thinking	4		
EG1311 Design and Make	4		
EE2211 Introduction to Machine Learning <u>or</u> EE2213 Introduction to Artificial Intelligence	4		
PF1101A Project Management and Finance	4		
<b>Robotics and Machine Intelligence Major Requirements</b>	<b>80</b>		
<b>Engineering Core Courses:</b>	<b>20</b>		
MA1511 Engineering Calculus	2		
MA1512 Differential Equations for Engineering	2		
MA1513 Linear Algebra & Differential Equations	2		
CE2407A Uncertainty Analysis for Engineers	2		
EG2401A Engineering Professionalism	2		
EG3611A Industrial Attachment <sup>1</sup>	10		
<b>RMI Major Courses:</b>	<b>60</b>		
RB1101 Fundamentals of Robotics I	4	Odd	
RB2101 Fundamentals of Robotics II	4	Even	
RB2202 Kinematics and Dynamics for Robots	4	Odd	
RB2203 Robot Control	4	Even	
RB2301 Robot Programming	4	Odd	
RB2302 Fundamentals of Artificial Neural Networks	4	Even	
RB3301 Introduction to Machine Intelligence	4	Even	
RB3302 Planning and Navigation	4	Odd	
RB3303 Robotic System Design and Application	4	Even	
RB4101A B.Eng Dissertation	8	Odd/Even	
<b>RMI Technical Electives</b>	<b>16</b>		
<b>MA1301 Introductory Mathematics (For direct poly intake only)<sup>2</sup></b>			
<b>TOTAL</b>	<b>160</b>		

<sup>1</sup> Engineering students may take up to 20 Units of credit-bearing internships, of which up to 10 Units can be used to fulfil the major internship requirement and the remaining will be counted towards Unrestricted Electives (UE) Course. This limit does not apply to students enrolled in the co-op degree programme.

<sup>2</sup> Accredited Polytechnic Direct Entry Students will have to take MA1301 Introductory Mathematics to be counted towards Unrestricted Elective (UE) Course.

Please check the [current schedule](#) regularly for possible changes, if any.

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**Annex A: Catalogue of courses in the Common Curriculum**

Common Curriculum Requirements	B.Eng.	
	Basket of Courses	
<b>General Education (GE) Courses:</b>		
<b>Singapore Studies</b>	CDE2501	Sustainable Systems Liveable Cities
<b>Critique and Expression</b>	ES2631	Critique and Communication of Thinking and Design
<b>Digital Literacy</b>	CS1010%	Programming Methodology (any variant)
<b>Data Literacy</b>	GEA1000 Quantitative Reasoning with Data <u>or</u> any course from the basket of courses approved by the NUS General Education Committee for this pillar.	
<b>Cultures and Connections (GEC)</b>	Students may read any course from the curated list of courses as approved by the NUS General Education Committee for this pillar.	
<b>Communities and Engagement (GEN)</b>	Courses from the curated list of courses as approved by the NUS General Education Committee for this pillar.	
<b>CDE Common Courses:</b>		
<b>Design Thinking</b>	DTK1234	Design Thinking
<b>Maker Space</b>	EG1311	Design and Make
<b>Artificial Intelligence</b>	EE2211 OR EE2213	Introduction to Machine Learning  Introduction to Artificial Intelligence
<b>Project Management</b>	PF1101A	Project Management and Finance

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Sample Semester Schedule for RMI students (matriculating from AY2025/2026 onwards)

Semester 1		Units	Semester 2		Units
CE2407A	Uncertainty Analysis for Engineers	2	DTK1234	Design Thinking	4
CS1010E	Programming Methodology	4	GEA1000	Quantitative Reasoning with Data	4
EG1311	Design and Make	4	MA1512	Differential Equations for Engineering	2
MA1511	Engineering Calculus	2	MA1513	Linear Algebra & Differential Equations	2
RB1101	Fundamentals of Robotics I	4	PF1101A	Project Management and Finance	4
GE/UE		4	RB2101	Fundamentals of Robotics II	4
<b>Sub-total</b>		<b>20</b>	<b>Sub-total</b>		<b>20</b>
Semester 3		Units	Semester 4		Units
EE2211	Introduction to Machine Learning or	4	CDE2501	Sustainable Systems Liveable Cities	4
EE2213	Introduction to Artificial Intelligence				
RB2202	Kinematics and Dynamics for Robots	4	ES2631	Critique and Comm. of Thinking and Design	4
RB2301	Robot Programming	4	RB2203	Robot Control	4
RB3302	Planning and Navigation	4	RB2302	Fundamentals of Artificial Neural Networks	4
GE/UE		4	GE/UE		4
<b>Sub-total</b>		<b>20</b>	<b>Sub-total</b>		<b>20</b>
Semester 5		Units	Semester 6		Units
EG3611A	Industrial Attachment	10	RB3301	Introduction to Machine Intelligence	4
EG2401A	Engineering Professionalism	2	RB3303	Robotic System Design and Application	4
RMI Technical Elective 1		4	RMI Technical Elective 2		4
GE/UE		4	GE/UE		4
			GE/UE		4
<b>Sub-total</b>		<b>20</b>	<b>Sub-total</b>		<b>20</b>
Semester 7		Units	Semester 8		Units
RB4101A	B.Eng. Dissertation	4	RB4101A	B.Eng. Dissertation	4
RMI Technical Elective 3		4	RMI Technical Elective 4		4
GE/UE		4	GE/UE		4
GE/UE		4	GE/UE		4
GE/UE		4	GE/UE		4
<b>Sub-total</b>		<b>20</b>	<b>Sub-total</b>		<b>20</b>
<b>Total</b>					<b>160</b>

Please note that this semester schedule is only a sample, you can customize your own schedule taking into consideration the semester the courses are offered and the pre- and co-requisites of a course.

More information on the Industrial Attachment may be found [here](#).

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Sample Semester Schedule for Accredited Poly Direct Entry RMI students (matriculating from AY2025/2026 onwards)

Year 2					
Semester 3		Units	Semester 4		Units
CS1010E	Programming Methodology	4	MA1512	Differential Equations for Engineering	2
CDE2501	Sustainable Systems Liveable Cities	4	MA1513	Linear Algebra & Differential Equations	2
RB1101	Fundamentals of Robotics I	4	GEA1000	Quantitative Reasoning with Data	4
MA1301	Introductory Mathematics <sup>1</sup> (UE 1)	4	PF1101A	Project Management and Finance	4
PC1201	Fundamentals of Physics <sup>2</sup> (UE 2)	4	RB2101	Fundamentals of Robotics II	4
			RB2302	Fundamentals of Artificial Neural Networks	4
<b>Sub-total</b>		<b>20</b>	<b>Sub-total</b>		<b>20</b>
Year 3					
Semester 5		Units	Semester 6		Units
CE2407A	Uncertainty Analysis for Engineers	2	ES2631	Critique and Comm. of Thinking and Design	4
MA1511	Engineering Calculus	2	EE2211 EE2213	Introduction to Machine Learning <u>or</u> Introduction to Artificial Intelligence	4
RB2202	Kinematics and Dynamics for Robots	4	EG2401A	Engineering Professionalism	2
RB2301	Robot Programming	4	GE/UE		4
RB3302	Planning and Navigation	4	RB2203	Robot Control	4
RMI Technical Elective 1		4	RB3301	Introduction to Machine Intelligence	4
<b>Sub-total</b>		<b>20</b>	<b>Sub-total</b>		<b>22</b>
Year 4					
Semester 7		Units	Semester 8		Units
RB4101A	B.Eng. Dissertation	4	RB4101A	B.Eng. Dissertation	4
RMI Technical Elective 2		4	RB3303	Robotic System Design and Application	4
RMI Technical Elective 3		4	RMI Technical Elective 4		4
GE/UE		4	GE/UE		4
GE/UE		4	GE/UE		4
<b>Sub-total</b>		<b>20</b>	<b>Sub-total</b>		<b>20</b>
<b>Total</b>					<b>122</b>

<sup>1</sup>Mathematics bridging course: MA1301

- Students who do not meet the following criteria will need to read the Mathematics bridging course, before you can start reading the required Mathematics courses.
- MA1301 will be counted towards Unrestricted Elective (UE) Course.
- Students not required to read MA1301 may take other GE/UE to fulfil the UE requirements.
- Students not required to read MA1301 may consider taking MA1511 and CE2407A in your Semester 3 (1<sup>st</sup> Year Sem 1).
- Please refer to [here](#) for more information.

<sup>2</sup>Physics bridging course: PC1201:

- Students who do not possess A-level H2 Physics or IB HL Physics or NUSHS Major CAP in Physics or its equivalent may be asked to read a Physics bridging course.
- PC1201 will be counted towards Unrestricted Elective (UE) Course.
- Students not required to read PC1201 may take other GE/UE to fulfil the UE requirements.
- Please refer to [here](#) for more information.

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