

## International Program Curriculum for the Undergraduate Schools Faculty of Science and Engineering, Waseda University (for entrance In **September 2014**)

Courses at the Faculty of Science and Engineering are comprised of Group A (foreign language courses), Group B (natural sciences courses), Group C (specialized courses) and other course groups. Students earn a bachelor's degree by taking courses in each group and completing a specified number of credits. Within Group C, the courses are divided into "required courses" which are courses that the students are required to take and earn credits based on their department, "elective required courses" which are courses that the students choose within a limited group of courses, and "elective courses" which are courses that the students can choose freely from the elective course group and earn a specified number of credits.

### Credit Requirements for Graduation

School	Department	Specified Number of Credits Required for Groups A to D											Number of Credits to Be Earned Freely From Groups A-D and Other	Total									
		Group A		Group B				Group C			Group D Physical Education/ Independent Studies												
		A1	A2	B1	B2			B3	B4	Specialized courses													
		Multi-disciplinary studies	Foreign Language (English)	Mathematics	Natural Sciences			Laboratory / Recitation	Information Science	Required Courses		Elective Required Courses			Elective Courses (*2)								
Physics	Chemistry				Life Science																		
Fundamental	Mathematics									8	22	25	0	31	136								
	Applied Mathematics									8	22	25		31	136								
	Computer Science and Engineering									8	8	39		31	136								
	Communications and Computer Engineering									8	8	39		31	136								
	Electronic and Photonic Systems									8	8	39		31	136								
	Intermedia Studies									8	8	39		31	136								
Creative	Modern Mechanical Engineering	6	2	20	4	4	2	8	4	6	40	4		36	136								
	Civil and Environmental Engineering									21	30	4		31	136								
Advanced	Physics																		22	16	17	31	136
	Applied Physics																		22	16	17	31	136
	Chemistry and Biochemistry																		0	0	55	31	136
	Applied Chemistry																		0	0	55	31	136
	Life Science and Medical Bioscience																	0	0	55	31	136	
	Electrical Engineering and Bioscience																	0	0	55	31	136	

(\*1) Students can also take Japanese language courses, courses at other schools of Waseda University, and other courses of Faculty of Science and Engineering offered in Japanese. In this case, the credits earned will be counted toward the "Number of Credits to Be Earned Freely from Groups A-D and Other Courses". Also, for credits earned in excess from Groups A-D courses will also be counted toward the "Number of Credits to Be Earned Freely from Groups A-D and Other Courses".

(\*2) Students can also take courses offered by other sub-programs of Faculty of Science and Engineering and specialized courses offered in English by sub-programs of other schools. In this case, the credits earned will be counted toward "Group C Elective Courses"

### Sample Courses In Groups A, B, and D

Group	Category	Courses	
Group A	A1 Multi-disciplinary studies	Philosophy of Science, History of Philosophy, The Chaotic Essence of Reality	
	A2 Foreign Language (English)	Writing for Scientists and Engineers, Research Presentation Skills	
Group B	B1 Mathematics	Vector Calculus, Ordinary Differential Equations, Discrete Mathematics, Partial Differential Equations	
	B2	Natural Sciences: Physics	Fundamentals of Mechanics, Fundamentals of Electromagnetism
		Natural Sciences: Chemistry	General Chemistry A, General Chemistry B
		Natural Sciences: Life Science	Introduction to Bioscience
	B3 Laboratory / Recitation	Science and Engineering Laboratory 1A, Science and Engineering Laboratory 2A	
B4 Information Science	Introduction to Programming, Introduction to Computer Science		
Group D	Physical Education/ Independent Studies	Volunteer, Internship, Sport Theories, Sport Activities	

\*The courses are subject to change without notice

### Sample Courses In Groups C

School	Department	Courses
Fundamental	Mathematics	Advanced Algebra, Advanced Geometry, Advanced Analysis, Mathematics of Simulation, Numerical Analysis
	Applied Mathematics	Probability and Statistics, Number Theory, Applied Geometry, Functional Analysis, Stochastic Processes,
	Computer Science and Engineering	Computer Science and Engineering Laboratory, Information Network Systems, Operating Systems, Information Security, Software Engineering
	Communications and Computer Engineering	Communications and Computer Engineering Laboratory, Teletraffic Theory, Transmission Theory, Wireless Communication, Mobile Communications
	Electronic and Photonic Systems	Circuit Theory A, Logic Circuits, Computer Systems, Electronic Circuits, Information Theory
	Intermedia Studies	Signal Processing, Image Processing, Multimedia Systems, Acoustic System, Visual Programming
Creative	Modern Mechanical Engineering	Mechanical Design A, Fundamentals of Robotics A, Engineering Thermodynamics, Fluid Dynamics, Mechatronics Laboratory A, Mechanical Engineering Laboratory A
	Civil and Environmental Engineering	Soil Mechanics, Hydraulics A, Geotechnical Engineering, Concrete Engineering, Laboratory Work on Concrete, Computer Aided Design (CAD)
Advanced	Physics	Intermediate Mechanics, Mathematical Methods for Physics A, Intermediate Electromagnetism, Quantum Mechanics A, Thermal Physics
	Applied Physics	Statistical Mechanics, Relativity, Power Systems Engineering, Biophysics A, Engineering Physics A
	Chemistry and Biochemistry	Green Materials Science, Biochemistry, Physical Chemistry Laboratory, Inorganic Analytical Chemistry Laboratory, Organic Chemistry Laboratory
	Applied Chemistry	Fundamentals of Chemical Engineering, Introduction to Industrial Chemistry, Fundamentals of Materials Chemistry, Analytical Chemistry, Industrial Chemistry
	Life Science and Medical Bioscience	Molecular Cell Biology A, Bioscience and Nanotechnology, Life Science and Medical Bioscience Laboratory, Intermediate Bioscience, Life Science and Medical Bioscience Sem
Electrical Engineering and Bioscience	Electric Power Circuits, Frontiers of Device Engineering, System Control, Advanced Electric Power Devices and Mechnes, Online Security Assessment and Control for Power Systems,	

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