

**IPSE UG Students Enrolled in Fall 2010 through 2017**

**Summary Table of Changes in IPSE Group B Courses for Students of Schools of Fundamental, Creative, and Advanced Sci. & Eng.**

For Fall 2020 course registration periods

\* You need to earn credits of Group B courses provided as "required" or "elective required" for your enrollment year. Please refer to column [A], [B], [C] or [D] here below **according to your enrollment year**. Also check the relevant pages of your enrollment year's Handbook.

\* When students enrolled in Fall 2010 & Fall 2011 take courses which are newly added for curriculum for students enrolled in Fall 2012/2013/2014/2015, such courses can have specific conditions for availability. Check the table below carefully.

Group / Category	[A]	[B]	[C]	[D]	Number of Credits	Number of class hours per week (* a 90-minute long class (per week) is shown as 2 (hours) in the table below)				Current Course Availability by Your Enrollment Year			Note
	Curriculum for Students Enrolled in Fall 2010	Curriculum for Students Enrolled in Fall 2011	Curriculum for Students Enrolled in Fall 2012/ 2013	Curriculum for Students Enrolled in Fall 2014/ 2015/ 2016/2017		First year		Second year		O: available X: not available *: conditionally available (see Note section)			
						Fall sem.	Spring sem.	Fall sem.	Spring sem.	For students enrolled in 2010	For students enrolled in 2011	For students enrolled in 2012/ 2013/ 2014/ 2015 /2016/2017	
B1 Mathematics	Foundations of Mathematics	Foundations of Mathematics	-	-	2					X	X	X	* Discontinued from Fall 2012
	Mathematics A (Linear Algebra)	Mathematics A (Linear Algebra)	-	-	4					X	X	X	* Discontinued from Fall 2012. * Those who have been enrolled in Fall 2010 or 2011 and still need to retake this course must take "Linear Algebra A" and "Linear Algebra B" shown in column [C].
	Mathematics B (Calculus)	Mathematics B (Calculus)	-	-	4					X	X	X	* Discontinued from Spring 2013. * Those who have been enrolled in Fall 2010 or 2011 and still need to retake this course must take "Calculus A" shown in column [C].
	-	-	Calculus A	Calculus A	4	4				*	*	O (required)	* For students enrolled in Fall 2010 & Fall 2011, only those who need to retake Mathematics B (Calculus) can take this course.
	-	-	Calculus B	Calculus B	4		4			X	X	O (required)	
	-	-	Linear Algebra A	Linear Algebra A	2	4 second-half				*	*	O (required)	* For students enrolled in Fall 2010 & Fall 2011, only those who need to retake Mathematics A (Linear Algebra) can take this course. * From fall semester 2015, there are two classes available.
	-	-	Linear Algebra B	Linear Algebra B	2		4 first-half			*	*	O (required)	* For students enrolled in Fall 2010 & Fall 2011, only those who need to retake Mathematics A (Linear Algebra) can take this course. * From spring semester 2015, there are two classes available. * Changed to spring quarter from 2019.
	-	-	Vector Calculus	Vector Calculus	2			4 second-half		X	X	O (required)	
	-	-			2			4 first-half		X	X	O (required)	* From fall semester 2016, there are two classes available. * From 2020, there are three classes available.
	-	-			2			2		X	X	O (required)	
	-	-	Ordinary Differential Equations	Ordinary Differential Equations	2			4 second-half		X	X	O (required)	From fall 2014, another class will be added so that there will be two classes (Mon 2nd period, Thur 1st period) available. For fall semester 2014, there is only one class available (Mon 2nd period).
	-	-			2			4 first-half		X	X	O (required)	* From spring semester 2015, there are two classes available. * From 2020, there are three classes available.
	-	-			2			2		X	X	O (required)	
-	-	Partial Differential Equations	Partial Differential Equations	2				2	O (elective)	O (elective)	O (elective required)	* For students enrolled in Fall 2010 & Fall 2011, the credit to be earned from this course will be classified as a Group B Elective course (to be counted towards graduation (to be appropriated to fill the "difference or gap")). When you (enrolled in 2010 & 2011) search this course, please choose "Mathematics Elective Courses" in the "2. Course category" pull down on the search display. * This course has become unavailable for spring semester 2014. * This course has become available for fall semester 2014. * This course has become available for spring semester 2015.	
-	-	Discrete Mathematics	Discrete Mathematics	2				2	X	X	O (elective required)		
-	-	Introduction to Probability and Statistics	Introduction to Probability and Statistics	2	4 first-half				O (elective)	O (elective)	O (elective required)	* For students enrolled in Fall 2010 & Fall 2011, the credit to be earned from this course will be classified as a Group B Elective course (to be counted towards graduation (to be appropriated to fill the "difference or gap ")).	

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B2 Physics	Fundamentals of Mechanics	Fundamentals of Mechanics	Fundamentals of Mechanics	Fundamentals of Mechanics	2	2				O (required)	O (required)	O (required)	* From fall semester 2015, there are two classes available. * From fall semester 2018, there is one class available.
	Fundamentals of Electromagnetism	Fundamentals of Electromagnetism	Fundamentals of Electromagnetism	Fundamentals of Electromagnetism	2		2			O (required)	O (required)	O (required)	* From spring semester 2015, there are two classes available. * From spring semester 2019, there is one class available.
	-	-	-	Modern Physics	2			2		O (elective)	O (elective)	O (elective)	* new course available from fall 2014; allocated to 2nd year. * If you earn the credit of Modern Physics, it will be shown as a Group B elective on your transcript and counted to fill the "difference or gap." * not available for fall 2016
	-	-	-	Introduction to Biophysics	2			2		O (elective)	O (elective)	O (elective)	* new course available from fall 2014; allocated to 2nd year. * If you earn the credit of Introduction to Biophysics, it will be shown as a Group B elective on your transcript and counted to fill the "difference or gap." * not available for fall 2016 * Not available for spring 2019. * <b>Not available for spring 2020.</b>
	-	-	-	Nonlinear Dynamics	2				2	O (elective)	O (elective)	O (elective)	* new course available from spring 2014; allocated to 2nd year. * If you earn the credit of Nonlinear Dynamics, it will be shown as a Group B elective on your transcript and counted to fill the "difference or gap." * <del>This course has become unavailable for spring semester, 2014.</del> * This course has become available for spring semester, 2015. * Not available for spring 2019. * <b>Not available for spring 2020.</b>
B2 Chemistry	General Chemistry	General Chemistry	-	-	2					X	X	X	* Discontinued from Fall 2012. * For students enrolled in Fall 2010 & Fall 2011, only those who need to retake "General Chemistry" can take "General Chemistry A" shown below.
	-	-	General Chemistry A	General Chemistry A	2	2				*	*	O (required)	* For students enrolled in Fall 2010 & Fall 2011, only those who need to retake "General Chemistry" can take this course. * From fall semester 2016, there are three classes available. * From fall semester 2018, there is one class available. * From fall semester 2019, there is four classes available.
	-	-	General Chemistry B	General Chemistry B	2	4 first-half				*	*	O (required)	
	-	-	General Chemistry B	General Chemistry B	2	4 second-half	2			*	*	O (required)	* For students enrolled in Fall 2010 & Fall 2011: this is the course to replace "Introduction to Chemistry and Biochemistry", a Group C specialized elective course which, though planned to be offered by School of Advanced Sci. & Eng. for 3rd year students in Spring semester, will be cancelled. * If you (enrolled in 2010 & 2011) earn the credit of this course, it will be regarded as a Group C elective course. For how to search this course, refer to "Introduction to Chemistry and Biochemistry" in "School of Advanced" section herein after. * From spring semester 2016, there are three classes available. * From fall semester 2018, there are two classes available. * From 2019, there is four classes available.
B2 Life Science	Introduction to Bioscience	Introduction to Bioscience	Introduction to Bioscience	Introduction to Bioscience	2	2				O (required)	O (required)	O (required)	* From spring semester 2016, there are two classes available. * From spring semester 2017, there are three classes available. * From spring semester 2018, class (1) and (2) are available in first-half * <b>From 2020, there are three classes available.</b>
							4 first-half			O (required)	O (required)	O (required)	



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B3 Laboratory / Recitation	Science and Engineering Laboratory 1A	Science and Engineering Laboratory 1A	Science and Engineering Laboratory 1A	Science and Engineering Laboratory 1A	3		8			O (required)	O (required)	O (required)	
	Science and Engineering Laboratory 1B	Science and Engineering Laboratory 1B	Science and Engineering Laboratory 1B	Science and Engineering Laboratory 1B	3			8		O (required)	O (required)	O (required)	
	Science and Engineering Laboratory 2A	Science and Engineering Laboratory 2A	Science and Engineering Laboratory 2A	Science and Engineering Laboratory 2A	2				4	O (required)	O (required)	O (required)	
B4 Information Science	Computer Literacy	Computer Literacy	-	-	2					X	X	X	* Discontinued from Fall 2012.
	-	-	Introduction to Computer Science	Introduction to Computer Science	2	2				X	X	O (required)	Another class available from fall 2014; allocated to 1st year. For fall semester 2015, there is only one class available. * From spring semester 2017, there are two classes available.
	-	-	-	Introduction to Computer Science	2		4 first-half			X	X	O (required)	
	-	-	Introduction to Programming	Introduction to Programming	2		2			*	*	O (required)	* You (as students enrolled in Fall 2010 and Fall 2011) can register this course UNLESS you have earned the credit of "Fundamentals of Programming" (Group C specialized elective required course by dept. of computer sci. & eng.). * If you (enrolled in Fall 2010 and 2011) earn the credit of Introduction to Programming, it will be shown as a Group B elective on your transcript and counted to fill the "difference or gap." * From spring semester 2015, there are two classes available.
	-	-	-	Codes and Ciphers	2		2			O (elective)	O (elective)	O (elective)	* new course available from spring 2014; allocated to 1st year. * If you earn the credit of Codes and Ciphers, it will be shown as a Group B elective on your transcript and counted to fill the "difference or gap." * Not available for spring 2018. * Not available for spring 2019. * Not available for spring 2020.
	-	-	-	Fortran Programming	2		2			O (elective)	O (elective)	O (elective)	* new course available from spring 2017; allocated to 1st year. * If you earn the credit of Fortran Programming, it will be shown as a Group B elective on your transcript and counted to fill the "difference or gap."
	-	-	-	Introduction to Computational Modeling	2			2		O (elective)	O (elective)	O (elective)	* new course available from fall 2014; allocated to 2nd year. * If you earn the credit of Introduction to Computational Modeling, it will be shown as a Group B elective on your transcript and counted to fill the "difference or gap." * Not available for fall 2018. * Not available for spring 2019. * Not available for spring 2020.
	-	-	-	Intermediate Programming	2			2		O (elective)	O (elective)	O (elective)	* new course available from fall 2015; allocated to 2nd year. * If you earn the credit of Intermediate Programming, it will be shown as a Group B elective on your transcript and counted to fill the "difference or gap."
	-	-	-	Advanced Fortran Programming	2			2		O (elective)	O (elective)	O (elective)	* new course available from spring 2017; allocated to 1st year. * If you earn the credit of Advanced Fortran Programming, it will be shown as a Group B elective on your transcript and counted to fill the "difference or gap."
	-	-	-	Introduction to Automata	2				2	O (elective)	O (elective)	O (elective)	* new course available from spring 2014; allocated to 2nd year. * If you earn the credit of Introduction to Automata, it will be shown as a Group B elective on your transcript and counted to fill the "difference or gap." * Not available for spring 2018. * Not available for spring 2019. * Not available for spring 2020.
	-	-	-	Java Programming	2		2			O (elective)	O (elective)	O (elective)	* new course available from spring 2016; allocated to 1st year. * If you earn the credit of Java Programming, it will be shown as a Group B elective on your transcript and counted to fill the "difference or gap."
-	-	-	Advanced Java Programming	2			2		O (elective)	O (elective)	O (elective)	* new course available from fall 2016; allocated to 2nd year. * If you earn the credit of Advanced Java Programming, it will be shown as a Group B elective on your transcript and counted to fill the "difference or gap."	