

Table of Curriculum (Undergraduate Program)

Classification	Course No.	Computer Code	Course Name	Lecture; Lab.; Credit (Assignment)	Semester	Note
Mandatory major courses	CS204	36.204	Discrete Mathematics	3:0:3(8)	Spring, Fall	
	CS206	36.206	Data Structure	3:0:3(6)	Spring, Fall	
	CS300	36.300	Introduction to Algorithms	3:0:3(8)	Spring, Fall	
	CS311	36.311	Computer Organization	3:0:3(3)	Spring, Fall	
	CS320	36.320	Programming Languages	3:0:3(3)	Spring, Fall	
	CS330	36.330	Operating Systems and Lab.	3:3:4(12)	Spring, Fall	
Elective major courses	CS202	36.202	Problem Solving	2:3:3(15)	Spring, Fall	
	CS211	36.211	Digital System and Lab.	3:3:4(10)	Spring	
	CS220	36.220	Programming Principles	3:0:3(6)	Spring or Fall	
	CS230	36.230	System Programming	3:0:3(4)	Spring, Fall	
	CS270	36.270	Intelligent robot design and programming	2:3:3	Spring	
	CS310	36.310	Embedded computer systems	3:3:4(10)	Fall	
	CS322	36.322	Formal Languages and Automata	3:0:3(6)	Fall	
	CS341	36.341	Introduction to Computer Networks	3:3:4	Fall	
	CS348	36.348	Introduction to Information Security	3:0:3	Spring	
	CS350	36.350	Introduction to Software Engineering	3:0:3(2)	Spring	
	CS360	36.360	Introduction to Database	3:0:3(8)	Spring or Fall	
	CS361	36.361	Introduction to Data Science	3:0:3	Spring	
	CS370	36.370	Symbolic Programming	2:3:3(6)	Spring	
	CS371	36.371	Introduction to Deep Learning	3:0:3	Fall	
	CS372	36.372	Natural Language Processing with Python	3:0:3	Spring or Fall	
	CS374	36.374	Introduction to Human-Computer Interaction	3:0:3	Spring, Fall	
	CS376	36.376	Machine Learning	3:0:3	Spring or Fall	
	CS380	36.380	Introduction to Computer Graphics	3:3:4(6)	Spring	
	CS402	36.402	Introduction to Logic for Computer Science	3:0:3(6)	Spring or Fall	◎
	CS406	36.406	Mathematics for Computer Science	3:0:3	Fall	◎
	CS408	36.408	Computer Science Project	1:6:3	Spring, Fall	
	CS409	36.409	Software Projects for Industrial Collaboration	1:6:3	Spring or Fall	
	CS411	36.411	System for Artificial Intelligence	3:0:3	Spring or Fall	◎
	CS420	36.420	Compiler Design	3:0:3(6)	Spring	◎
	CS422	36.422	Computation Theory	3:0:3(8)	Spring or Fall	◎
	CS423	36.423	Probabilistic Programming	3:0:3	Spring	◎
	CS431	36.431	Concurrent Programming	3:0:3	Spring or Fall	◎
	CS440	36.440	Data Communication	3:0:3(6)	Spring or Fall	◎
	CS442	36.442	Mobile Computing and Applications	3:0:3	Spring	◎
	CS443	36.443	Distributed Algorithms and Systems	3:0:3	Fall	◎
CS447	36.447	Web Security Attack Laboratory	2:3:3	Spring	◎	

Classification	Course No.	Computer Code	Course Name	Lecture; Lab.; Credit (Assignment)	Semester	Note
Elective major courses	CS453	36.453	Automated Software Testing	3:0:3(6)	Spring	◎
	CS454	36.454	Artificial Intelligence Based Software Engineering	3:0:3	Fall	◎
	CS457	36.457	Requirements Engineering for Smart Environments	3:0:3	Spring	◎
	CS458	36.458	Dynamic Analysis of Software Source Code	3:0:3	Spring	◎
	CS459	36.459	Introduction to Services Computing	3:0:3(6)	Fall	◎
	CS470	36.470	Introduction to Artificial Intelligence	3:0:3(8)	Fall	◎
	CS471	36.471	Graph Machine Learning and Mining	3:0:3	Spring	◎
	CS473	36.473	Introduction to Social Computing	3:0:3	Fall	◎
	CS474	36.474	Text Mining	3:0:3	Fall	◎
	CS475	36.475	Machine Learning for Natural Language Processing	3:0:3	Fall	◎
	CS477	36.477	Introduction to Intelligent Robotics	3:0:3	Spring	◎
	CS479	36.479	Machine Learning for 3D Data	3:0:3	Fall	◎
	CS481	36.481	Data Visualization	3:0:3	Fall	◎
	CS482	36.482	Computer Animation	3:2:3	Spring or Fall	◎
	CS483	36.483	Geometric Modeling and Processing	3:0:3	Fall	◎
	CS484	36.484	Introduction to Computer Vision	3:0:3	Fall	◎
	CS485	36.485	Machine Learning for Computer Vision	3:0:3	Fall	◎
	CS486	36.486	Wearable User Interface	3:0:3	Spring	◎
	CS489	36.489	Computer Ethic & Social Issues	3:0:3(2)	Fall	◎
	CS492	36.492	Special Topics in Computer Science	3:0:3(6)	Spring or Fall	◎
CS493	36.493	Special Topics in Computer Science I	1:0:1	Spring or Fall		
CS494	36.494	Special Topics in Computer Science II	2:0:2	Spring or Fall		
Research	CS490	36.490	Research in Computer Science	0:6:3	Spring, Fall	
	CS495	36.495	Individual Study	0:6:1	Spring, Fall	
	CS496	36.496	Seminar	0:2:1	Spring, Fall	

◎: Course mutually recognized by undergraduate and graduate programs

※Course classification, course title, and mutual recognition of credits may differ according to the effective year of the requirements.

Table of Curriculum (Graduate Program)

Classification		Course No.	Computer Code	Course Name	Lecture; Lab.; Credit (Assignment)	Semester	Note
Mandatory	Mandatory	CC010	11.010	Special Lecture on Leadership	1:0:0	Fall	
		CC020	11.020	Ethics and Safety I	1AU	Spring, Fall	
	Choose 1	CC500	11.500	Scientific Writing	3:0:3	Spring, Fall	
		CC511	11.511	Probability and Statistics	2:3:3	Spring, Fall	
		CC512	11.512	Introduction to Materials and Engineering	3:0:3	Spring, Fall	
		CC513	11.513	Engineering Economy and Cost Analysis	3:0:3	Fall	
		CC522	11.522	Introduction to Instruments	2:3:3	Fall	
		CC530	11.530	Entrepreneurship and Business Strategies	3:0:3	Fall	
		CC531	11.531	Patent Analysis and Invention Disclosure	3:0:3	Spring, Fall	
		CC532	11.532	Collaborative System Design and Engineering	4:0:4	Spring	
Elective Major Course	Essential I	CS500	36.500	Design and Analysis of Algorithms	3:0:3(6)	Spring	◎/Theory
		CS504	36.504	Computational Geometry	3:0:3(8)	Spring	◎/Theory
		CS510	36.510	Computer Architecture	3:0:3(6)	Spring	◎/Computer Systems
		CS520	36.520	Theory of Programming Languages	3:0:3(6)	Fall	◎/Theory
		CS522	36.522	Theory of Formal Languages and Automata	3:0:3(6)	Spring	◎/Theory
		CS524	36.524	Program Analysis	3:0:3	Spring	◎/Theory
		CS530	36.530	Operating System	3:0:3(6)	Fall	◎/Computer Systems
		CS540	36.540	Network Architecture	3:0:3(9)	Spring or Fall	◎/Computer Systems
		CS542	36.542	Internet Systems Technology	3:0:3(9)	Spring or Fall	◎/Computer Systems
		CS543	36.543	Distributed Systems	3:0:3(3)	Fall	◎/Computer Systems
		CS546	36.546	Wireless Mobile Internet	3:0:3(5)	Spring or Fall	◎/Computer Systems
		CS548	36.548	Advanced Information Security	3:0:3(6)	Fall	◎/Computer Systems
		CS550	36.550	Software Engineering	3:0:3(4)	Spring	◎/Software
		CS552	36.552	Models of Software Systems	3:0:3(10)	Fall	◎/Software
		CS554	36.554	Designs for Software and Systems	2:3:3(4)	Fall	◎/Software
		CS560	36.560	Database System	3:0:3(6)	Spring	◎/Software
		CS562	36.562	Database Design	3:0:3(6)	Fall	◎/Software
		CS564	36.564	Data Science Methodology	3:0:3(6)	Spring or Fall	◎/Software
		CS570	36.570	Artificial Intelligence and Machine Learning	3:0:3(6)	Spring	◎/Software
		CS572	36.572	Intelligent Robotics	3:0:3(6)	Fall	◎/Software
CS574	36.574	Natural Language Processing I	3:0:3(6)	Spring or Fall	◎/Software		

Classification	Course No.	Computer Code	Course Name	Lecture; Lab.; Credit (Assignment)	Semester	Note	
	CS576	36.576	Computer Vision	3:0:3(8)	Spring or Fall	◎/Software	
	CS579	36.579	Computational Linguistics	3:0:3(6)	Fall	◎/Theory	
	CS580	36.580	Computer Graphics	3:1:3(5)	Spring	◎/Software	
	CS584	36.584	Human-Computer Interaction	3:0:3	Spring, Fall	◎/Computer Systems	
	CS590	36.590	Semantic Web	3:0:3(6)	Spring or Fall	◎/Software	
	CS610	36.610	Parallel Processing	3:0:3(8)	Spring	Computer Systems	
	CS632	36.632	Embedded Operating Systems	3:0:3(6)	Fall	Computer Systems	
Elective Major Course	Elective	CS541	36.541	Smart Business Application and Development	3:0:3(5)	Fall	◎
		CS565	36.565	IoT Data Science	3:0:3	Spring	◎
		CS575	36.575	AI Ethics	3:0:3	Spring	◎
		CS577	36.577	Robot Learning and Interaction	3:0:3	Fall	◎
		CS578	36.578	Bionic Human-Robot Interaction	3:0:3	Spring or Fall	◎
		CS588	36.588	Deep Learning based Image Search	3:0:3	Spring	◎
		CS591	36.591	Software Ecosystem	3:0:3(5)	Fall	◎
		CS592	36.592	Special Topics in Computing	3:0:3	Spring or Fall	◎
		CS600	36.600	Graph Theory	3:0:3(6)	Spring or Fall	
		CS612	36.612	Social network-aware ubiquitous computing	3:0:3	Spring	
		CS620	36.620	Theory of Compiler Construction	3:0:3(2)	Spring or Fall	
		CS634	36.634	Real-Time Systems	3:0:3	Spring or Fall	
		CS636	36.636	UX-oriented Platform Design Studio I	0:9:3	Spring or Fall	
		CS644	36.644	Ubiquitous Networking	3:0:3(6)	Spring or Fall	
		CS646	36.646	Digital Contents Security	3:0:3	Spring or Fall	
		CS650	36.650	Advanced Software Engineering	3:0:3(6)	Fall	
		CS652	36.652	Software & Systems Product Line Engineering	3:0:3(6)	Spring or Fall	
		CS654	36.654	Software Process	3:0:3(6)	Spring or Fall	
		CS655	36.655	System Modeling and Analysis	3:0:3(6)	Spring or Fall	
		CS656	36.656	Software Engineering Economics	3:0:3	Spring	
		CS660	36.660	Information Storage and Retrieval	3:0:3(6)	Spring	
		CS662	36.662	Distributed Database	3:0:3(6)	Spring	
		CS664	36.664	Advanced Database System	3:0:3(6)	Spring or Fall	
		CS665	36.665	Advanced Data Mining	3:0:3	Spring or Fall	
		CS670	36.670	Fuzzy and Intelligent System	3:0:3(6)	Spring or Fall	
		CS671	36.671	Advanced Machine Learning	3:0:3(6)	Spring or Fall	
		CS672	36.672	Reinforcement Learning	3:0:3(2)	Spring or Fall	

Classification	Course No.	Computer Code	Course Name	Lecture; Lab.; Credit (Assignment)	Semester	Note	
Elective Major Course	Elective	CS674	36.674	Natural Language Processing II	3:0:3(6)	Spring or Fall	
		CS676	36.676	Pattern Recognition	3:0:3(3)	Fall	
		CS680	36.680	Advanced Computer Graphics	3:0:3(6)	Fall	
		CS681	36.681	Computational Imaging	3:0:3	Spring or Fall	
		CS682	36.682	Digital Storytelling	3:0:3(3)	Spring or Fall	
		CS686	36.686	Motion Planning and Applications	3:0:3	Fall	
		CS700	36.700	Topics in Computation Theory	3:0:3(8)	Spring or Fall	
		CS710	36.710	Topics in Computational Architecture	3:0:3(6)	Spring or Fall	
		CS712	36.712	Topics in Parallel Processing	3:0:3(6)	Fall	
		CS720	36.720	Topics in Programming Languages	3:0:3(2)	Spring or Fall	
		CS730	36.730	Topics in Operating Systems	3:0:3(6)	Spring or Fall	
		CS744	36.744	Topics in System Architecture	3:0:3(9)	Spring or Fall	
		CS748	36.748	Topics on Information Security	3:0:3(3)	Fall	
		CS750	36.750	Topics in Software Engineering	2:3:3(6)	Spring or Fall	
		CS760	36.760	Topics in Database System	3:0:3(6)	Spring or Fall	
		CS770	36.770	Topics in Computer Vision	3:0:3(8)	Spring or Fall	
		CS772	36.772	Topics in Natural Language Processing	3:0:3(6)	Spring or Fall	
		CS774	36.774	Topics in Artificial Intelligence	3:0:3(6)	Spring or Fall	
		CS776	36.776	Topics in Cognitive Science	3:0:3(6)	Spring or Fall	
		CS780	36.780	Topics in Interactive Computer Graphics	2:3:3(10)	Spring or Fall	
		CS788	36.788	Topics on Human-Computer Interaction	3:0:3(6)	Spring or Fall	
		CS790	36.790	Technical Writing for Computer Science	2:3:3(6)	Spring or Fall	
		CS891	36.891	Special Topics in Computer Science I	1:0:1	Spring or Fall	
CS892	36.892	Special Topics in Computer Science II	2:0:2	Spring or Fall			
CS893	36.893	Special Topics in Computer Science III	3:0:3	Spring or Fall			
Research	CS960	36.960	M.S. Thesis Research		Spring, Fall		
	CS965	36.965	Individual Study in M.S.		Spring, Fall		
	CS966	36.966	Seminar	1:0:1	Spring, Fall		
	CS980	36.980	Ph.D. Dissertation Research		Spring, Fall		
	CS986	36.986	Seminar	1:0:1	Spring, Fall		

⊙: Course mutually recognized by undergraduate and graduate programs

※Course classification, course title, and mutual recognition of credits may differ according to the effective year of the requirements.

Substitute Course List

Substitute courses in the department					
Category	Courses currently offered		Courses not currently offered		
	Course no.	Course title	Course no.	Course title	Remark
Undergraduate	CS300	Introduction to Algorithms	CS300	Algorithm	Subject name change
	CS340	Interdisciplinary Approach to Network Science	CS340	Network of Things	Subject name change
	CS341	Introduction to Computer Networks	CS441	Introduction to Computer Networks	Abolition
	CS341	Introduction to Computer Networks	CS441	Introduction to Computer Networks	Code change
	CS374	Introduction to Human-Computer Interaction	CS472	Human-Computer Interaction	Abolition
	CS380	Introduction to Computer Graphics	CS480	Introduction to Computer Graphics	Code change
	CS442	Mobile Computing and Applications	CS446	Mobile Applications Development	Abolition
	CS442	Mobile Computing and Applications	CS442	Advanced Computer Network	Subject name change
	CS453	Automated Software Testing	CS453	Formal software verification techniques	Subject name change
	CS457	Requirements Engineering for Smart Environments	CS457	Web-based Software Development	Subject name change
	CS459	Introduction to Services Computing	CS459	Strategies and Development of Business Applications using SOA	Subject name change
	CS459	Introduction to Services Computing	CS459	Web Technologies and Business Strategies	Subject name change
	CS482	Interactive Computer Graphics	CS482	Computer Animation	Subject name change
CS484	Introduction to Computer Vision	CS484	Introduction to Image Processing	Subject name change	
Graduate	CS543	Distributed Systems	CS642	Distributed Processing Systems	Subject name/code change
	CS548	Advanced Information Security	CS544	Information Security	Subject name/code change
	CS570	Artificial Intelligence and Machine Learning	CS570	Artificial Intelligence	Subject name change
	CS588	Deep Learning based Image Search	CS688	Large-Scale Image & Video Retrieval	Abolition
	CS644	Advanced Network Architecture	CS644	Ubiquitous Networking	Subject name change
	CS671	Advanced Machine Learning	CS671	Machine Learning	Subject name change
Substitute courses offered by other departments					
Category	Courses offered by the department		Courses offered by other departments		
	Course no.	Course no.	Course no.	Course no.	Remark
Undergraduate	CS204	Discrete Mathematics	MAS275	Discrete Mathematics	unidirectional substitution
	CS311	Computer Organization	EE312	Introduction to Computer Architecture	bidirectional substitution
Graduate	CS541	Smart Business Application and Development	MSB554	Smart Business Application and Development	bidirectional substitution
	CS655	System Modeling and Analysis	EE612	Discrete Event System Modeling & Simulation	bidirectional substitution
	CS672	Reinforcement Learning	AI611	Deep Reinforcement Learning	unidirectional substitution
	CS676	Pattern Recognition	EE534	Pattern Recognition	bidirectional substitution

※Substitute courses may differ according to the effective year of the requirements.

※If both substitute courses are completed, one course will be treated as a retake and excluded from the total credits.