common subjects (mandatory)

urse Numb	Course Name	授業方法	Credits	Standard Academ	Course Offering Term	Weekday and Period	Classroom	Instructor	Course Overview	Remarks
01CJ007	Software Development Engineering	4	4.0	1	SprAB	Mon/Thu 3, 4	3B311	Yasuhiro Hayase, 研也 中沢	This class will teach 1) software design based on requirement analysis, 2) software lifecycle and its standards, 3) object-oriented design using UML, 4) process of software development.	
01CJ009	Corporate Information Systems	4	3.0	1	FallABC	Tue3, 4	3B311	Makoto Nakamura, Shin Takahashi et al.	EA(エンタープライズアーキテクチャ),企業の経営戦略,IT経営,IT資源調達,ITサービス活用の役割を知る.システム化対象の業務モデル,要件定義技法を学び,代表的な企業情報システムの概要と代表的パッケージや企業での実例等を理解する.	
01CJ014	PBL System Development A	4	3.0	1	SprAB	Mon5,6 by request	3B311	Shinichi Yamagiwa, Yasuhiro Hayase, Satoshi Saga, Chiemi Watanabe	Student teams do IT system development to solve it for a business problem of a real or virtual customer. They do technical investigation to be necessary for IT system development, proto typing and do confirmation and realization of the propriety-related inspection. They accomplish each project in a PBL (Project Based Learning) form for autonomy and gets possible to get lessons learned from system development and project administration.	
01CJ017	Practical Development for Business Application	4	2.0	1, 2	Sum Vac	by request		Shinichi Yamagiwa, Yasuhiro Hayase, Satoshi Saga, Chiemi Watanabe	This class will teach the techniques for innovative approach to solve the requirement in the business application field. The attendees of this class will master the development skills of the system that provides various solutions in the market experiencing practical excises in the class.	実践教育ネットワーク事業関連講義.機材の数以上の履修生数は許容できない.高度ITプログラム1年次春学期AB開講必修科目の履修,もしくはそれと同等な内容の実務経験・スキルを習得していることが望ましい.
01CJ018	Research and Development Projects A	5	3.0	2	SprAB	Fri5,6 Intensive	3B311	Kazuhiko Kato, Kazuo Misue, Sho Tsugawa, Hideitsu Hino	学生主導で各自の研究開発活動の一環として「動くシステム」を構築するための開発プロジェクトを企画、運営し、企画力、システム開発力、コミュニケーション能力、マネジメント能力を含む総合的実践IT力を養成する。	
01CJ026	Practial Cyber Security	1	2.0	1	FallAB	Tue5,6	3B311	Yasuhiro Hayase, Masayo Fujimoto, Yuichi Kuramoto, Tatsushi Yamada	当科目では、ガバナンスやマネジメントといった全体的な視点から、セキュアプログラミングやOSといった技術要素まで、トータルでのセキュリティに焦点をあて、情報資産を脅かす脅威や、企業における情報セキュリティ対策の実態を学び、企業において、安全に情報を保護し、マネジメントできる人材を育成する。	2012年度までに開講された「セキュリティ機構論」(01CH208, 01CJ206)の単位を修得したものの履修は認めない.
01CJ027	PBL System Development B	4	3.0	1	FallABC	Mon5,6 by request	3B311	Shinichi Yamagiwa, Yasuhiro Hayase, Satoshi Saga, Chiemi Watanabe	実在するまたは仮想的な顧客の業務課題に対して、それを解決するためのITシステム開発を行う。PBLシステム開発Aで行った技術的調査、プロトタイピングを踏まえて、第二~第三イテレーションにより完成度を高めることができる。学生チームが、自律的にPBL (Project Based Learning)形式でプロジェクトを遂行し、システム開発とプロジェクト運営の中から学びと教訓を得ることができる。	平成28年度以降入学者対象。
01CJ028	Research and Development Projects B	5	3.0	2	FallABC	Fri5,6 Intensive	3B311	Kazuhiko Kato, Kazuo Misue, Sho Tsugawa, Hideitsu Hino	学生主導で各自の研究開発活動の一環として「動くシステム」を構築するための開発プロジェクトを企画、運営し、企画力、システム開発力、コミュニケーション能力、マネジメント能力を含む総合的実践IT力を養成する。	平成28年度以降入学者対象。
01CJ029	Special Lecture on Recent IT Advances	1	2.0	1	SprABC	Thu5, 6	3B311	Satoshi Saga et al.	Lecturers from a wide range of industry will give us lectures on the various case studies of the impact of IT on society, the development trend in leading-edge technology, the innovative use of IT, and their company's interpretation regarding these trends.	平成28年度以降入学者対象。Co-shared with CS (01CJ201).Excludes who got credits of Special Lecture on Recent IT Advances in CS before 2012. CDP

urse Numb	Course Name	授業方法	Credits	Standard Academ	Course Offering Term	Weekday and Period	Classroom	Instructor	Course Overview	Remarks
01CJ030	Special Lecture on Social Innovation by ICT	1	2.0	1	FallAB	Thu3,4	3B311	Kazuo MISUE et al.	This class aims to foster human resources that cause social innovation by using ICT. Lecturers invited from industry gives talk about cases of innovation in various fields. Some group works are mixed into lectures. Through the group works, a creative process for innovation is learned.	平成28年度以降入学者対象。Identical to 01CH747. CDP
01CJ031	Service Oriented Architecture Engineering	1	2.0	2	SprAB	Thu3,4	3B401	Sachiyo Zushi, Masaki Ono, Koichi Nakamura, Buntarou Shizuki	This course gives students the concept of Service Oriented Architecture (SOA). It also covers techniques to develop a system based on SOA using various services including Web services.	平成28年度以降入学者対象。
01CJ032	Project Practice Workshop	3	2.0	1, 2	Sum Vac	by request		Satoshi Saga, Chiemi Watanabe, Shinichi Yamagiwa, Yasuhiro Hayase	The aim of this project is to give the students an opportunity to learn Research-and-Development skills and demonstrate the achievement of individual and independent works close to the realistic work situation.	Identical to 01CH811.

common subjects (elective mandatory)

urse Numb	Course Name	授業方法	Credits	Standard Academic Year	Course Offering Term	Weekday and Period	Classroom	Instructor	Course Overview	Remarks
01CJ101	Internship I for Advanced IT Experiences	3	2.0	1, 2	Annual	by request		Hotaka Takizawa	Students aim to manage given tasks as a project member of an industry, which is decided by careful matching, and obtain good results. This course enables students to learn skills which are exploited in the business environment as well as obtain useful information to decide his/her future career through the valuable work experience. It is required to submit the final report.	CDP
01CJ103	Web and Data Modeling	4	3.0	1	FallAB	Tue2 Thu5,6	3B311	Hiroyuki Kitagawa, Toshiyuki Amagasa, Atsuyuki Morishima	This course is designed to learn approaches to the problems of large-scale data management and application construction from a data engineering perspective. It is given in a hands-on style, and covers server-side programming and database access using Java, data modeling and database design using ER diagram, and database performance tuning.	
01CJ110	Ethics for Engineers in Business	1	1.0	1, 2	SprC	Intensive		Hideki Kakeya	多くの技術者は企業に属し、その中で社会とビジネス的な関わりを持ちながら仕事を行っている。本講義では、具体的事例や現場の声を取り上げながら、企業における技術者の倫理について議論する。	01ZZ102を履修済みの者は履修できない。Identical to 01ZZ107.
01CJ111	Program Development on Embedded System	4	3.0	1	SprAB	Tue5,6 Thu2	3B311	Shinichi Yamagiwa	This class will teach the practical overview of the advanced functions equipped in mobile terminals, the conventional IT infrastructure and embedded systems. The attendee of this class will learn the skills to develop combined systems that connect these functions and the infrastructure, and will master the techniques for approaching innovative solutions, proposals and implementation skills.	実践教育ネットワーク事業関連講義。機材の数以上の履修生数は許容できない。Identical to 01CH745.
01CJ112	Embedded Systems	4	3.0	1	FallAB	Mon2-4	3B311	Koji Hasebe, Yoshiki Yamaguchi et al.	This course introduces comprehensive and systematic trends of embedded systems. Through looking at several R&D experiences of car, mobile, and information products, students obtain required development techniques, process and so on.	平成28年度以降入学者対象。

major subjects (elective)

urse Numb	Course Name	授業方法	Credits	Standard Academic Year	Course Offering Term	Weekday and Period	Classroom	Instructor	Course Overview	Remarks

urse Numb	Course Name	授業方法	Credits	Standard Academ	Course Offering Term	Weekday and Period	Classroom	Instructor	Course Overview	Remarks
01CJ204	Advanced Computer Networks	1	2.0	1, 2	SprAB	Thu5, 6	3B402	Shigetomo Kimura	The lecture shows system design issues and transmission methods for information networks. It also explains communication control techniques for protocols such as IP and TCP, which are typically used in the Internet.	Identical to 01CH407.
01CJ205	Programming Environment	1	2.0	1, 2	FallAB	Thu5, 6	3B301	Osamu Tatebe, Mitsuhisa Sato	Discussion of cutting-edge programming language processing systems and environments for software development enabling achievement of parallel programming, object-oriented programming, and other advanced information processing systems.	Identical to 01CJ301. Lectures are conducted in English.
01CJ210	Advanced Course in Distributed Systems	1	2.0	1, 2	SprAB	Mon5, 6	3B302	Kazuhiko Kato, Hirotake Abe	LANやインターネット上で分散システム構築を行うための基本概念，設計論，実装技術を学習する．また，クラウドコンピューティングの技術動向についても解説する．	平成21年度以前の「分散システム工学」履修者を除く Open in an even number year. Identical to 01CH306.
01CJ211	Systems and Optimization	1	1.0	1, 2	SprA	Tue3, 4	3B311	Takahito Kuno, Yoshio Sano	Lectures are given about the various optimization theories for the system design and management.	2012年度までに開設された「システム制御」(01CH106, 01CJ207)の単位を修得したものの履修は認めない。 Identical to 01CH109.
01CJ212	Special Topics in Computer Human Interaction I	1	2.0	1, 2					Discuss recent topics and future trends in Computer Human Interaction. The lecture covers the topics of fundamental technology and applications.	Open in an odd number year. Identical to 01CH209.
01CJ213	Special Topics in Computer Human Interaction II	1	2.0	1, 2	FallAB	Fri1, 2	3B401	Kazuo Misue, Shin Takahashi	This class is aimed at developing the ability to design interactive systems from the viewpoints of their users. Through lectures and group works, students acquire knowledge and skills required to design their human interfaces.	2012年度までに開講された「情報システムデザイン論」の単位を修得したものの履修は認めない。 Open in an even number year. Identical to 01CH210. 定員30名程度
01CJ214	Advanced Nonlinear Systems	1	2.0	1, 2	FallAB	Fri5, 6	3B301	Ryuji Tokunaga	物理, 化学, 生体及び数理系にみられるカオス, 分岐等の非線形現象を紹介し, 反応拡散等の非線形性の発生機構とそれらの解析手法を力学周辺理論と計算科学の側面から講義する.	Open in an even number year. Identical to 01CH101.
01CJ216	Intelligent Sensory Information Processing	2	2.0	1, 2	SprAB	Tue3, 4	3A410	Akihisa Ohya	Sensory information processing for intelligent behaviors will be discussed, such as knowledge generation, hierarchical recognition, Kansei information processing, human interface, and so on. Topics in the research field of robotics will be studied.	Identical to 01CH205.
01CJ217	Concurrent Systems	1	2.0	1, 2	SprAB	Mon3, 4	3B302	Yasushi Shinjo, Shuichi Oikawa	This class introduces concurrent systems and discusses software techniques for building concurrent and distributed applications. Students must write programs using multithreading, communication libraries, and distributed shared spaces.	Identical to 01CH303.
01CJ218	Advanced System Programming	1	2.0	1, 2	FallAB	Mon5, 6	3B302	Atusi Maeda, Osamu Tatebe	Learn about system programming, basis of design and development of computer systems, through lecture and exercise based on concrete examples.	Identical to 01CH307.
01CJ219	Parallel and Distributed Systems	4	2.0	1, 2	FallAB	Tue1, 2	3Z1001	Koichi Wada, Shinichi Yamagiwa	並列分散システムにおける情報の授受と共有について論じる.特にクラスタにおける効率よいメッセージ通信やデータ共有に関して,それを支えるアーキテクチャ技術,ネットワーク技術,ソフトウェア技術について解説する.	Open in an even number year. Identical to 01CH404.
01CJ220	Advanced Circuit Engineering	4	2.0	1, 2	SprAB	Mon3, 4	3B301	Kazuhiro Shouno	This course introduces some topics of the analog filter design. We discuss (1) transfer function, (2) techniques for designing the transfer function from the desired frequency characteristics, (3) circuit design with specifications and (4) advantages and disadvantages of circuit realizations.	Open in an even number year. Identical to 01CH408.

urse Numb	Course Name	授業方法	Credits	Standard Academ	Course Offering Term	Weekday and Period	Classroom	Instructor	Course Overview	Remarks
01CJ223	Advanced Course in Statistical Language Modeling	1	2.0	1, 2					This course will introduce students to several modern techniques for the computer systems that can process natural human language such as Japanese. We will focus on the methods based on statistical language modeling and large corpora (text data).	2015年度まで開講された「自然言語処理特論」(01CH603)の単位を修得した者の履修は認めない。Open in an odd number year. Identical to 01CH603.
01CJ224	Image Recognition and Understanding	4	2.0	1, 2					This course will introduce students to the basic theory and applications of image recognition and understanding, showing specific examples of face recognition, human motion analysis and so on. In particular, their mathematical aspects will be emphasized in the course.	Open in an odd number year. Identical to 01CH605.
01CJ226	Systems and Control	1	1.0	1, 2	SprB	Tue3,4	3B311	Tohru Kawabe	Lectures are given about the control theories for analysis and design of embedded systems with uncertainties.	2012年度までに開設された「システム制御」(01CH106, 01CJ207)の単位を修得したものの履修は認めない. Identical to 01CH108.
01CJ227	Server Construction Techniques on Virtualization	4	2.0	1, 2	FallC	Intensive	3B311	Shin Takahashi et al.	仮想化技術の基本概念と実装方式、実システムにおける活用方法を理解する。また、仮想化技術の重要な活用例としてクラウドコンピューティングについて学び、パブリッククラウド環境での実習を通じて理解を深める。	
01CJ229	Advanced Course in Signal and Image Processing I	1	1.0	1, 2	SprA	Mon5,6	3A306	Hiroyuki Kudo	マルチメディアの基盤技術である画像・音声などのメディア情報の符号化(圧縮)と呼ばれる分野について解説する。	2012年度まで開講された「信号画像処理・医用イメージング特論」または2013-2014年度に開講された「信号画像処理特論」(01CH501)の単位を修得した者の履修は認めない。Identical to 01CH508.
01CJ230	Advanced Course in Signal and Image Processing II	1	1.0	1, 2	SprB	Mon5,6	3A306	Taizo Suzuki,Keisuke Kameyama	マルチメディアの技術である高度なフィルタによる画像処理への応用について解説する。	2012年度まで開講された「信号画像処理・医用イメージング特論」または2013-2014年度に開講された「信号画像処理特論」(01CH501)の単位を修得した者の履修は認めない。Identical to 01CH509.
01CJ231	Advanced Course in Signal and Image Processing III	1	1.0	1, 2	SprC	Mon5,6	3A306	Hotaka Takizawa	マルチメディアにおける信号画像処理,医用イメージングや計算機診断支援などのトピックスに関して,年度に応じて適当なものを取り上げて解説する.	2012年度まで開講された「信号画像処理・医用イメージング特論」または2013-2014年度に開講された「信号画像処理特論」(01CH501)の単位を修得した者の履修は認めない。Identical to 01CH510.
01CJ232	Advanced Course in Speech Media Engineering	1	1.0	1, 2	SprAB	Wed2	3B303	Shoji Makino,Takeshi Yamada	This lecture introduces fundamentals and applications for speech and acoustic media processing. Specific content includes sound source separation and speech recognition.	2014年度までに開講された「音声メディア工学特論」(01CH502)の単位を修得した者の履修は認めない。Identical to 01CH507.
01CJ233	Adaptive Media Processing	1	1.0	1, 2	SprAB	Mon2	3B303	Keisuke Kameyama	Adaptive techniques in processing, recognition and retrieval of media information will be discussed. (Lecture in English).	Identical to 01CH609. Lectures are conducted in English.

urse Numb	Course Name	授業方法	Credits	Standard Academ	Course Offering Term	Weekday and Period	Classroom	Instructor	Course Overview	Remarks
01CJ235	Data Analysis	1	2.0	1, 2	FallAB	Thu5, 6	3B405	Keisuke Kameyama, Hideitsu Hino, Sho Tsugawa	Major data analysis techniques from the basic to the state-of-the-art, used for evaluation of research results will be discussed. Accompanies exercises using the R language.	Identical to 01CH738.
01CJ236	Services and Data Privacy	1	1.0	1, 2	SprC	Intensive		Jun Sakuma, Ryousuke Suzuki, Akiko Orita	ビッグデータが提供しうる新しい社会のデザインについて学ぶとともに, データプライバシーの様々な問題とその対処を, 技術, 社会, 法律, 経済の観点から俯瞰する.	2014年度まで開講された「コンピュータサイエンス特別講義VIII」(01CH711) の単位を修得した者の履修は認めない。春C に開講。詳細は掲示を参照のこと。Identical to 01CH746.
01CJ402	Advanced Technical English	1	1.0	1, 2	FallAB	Tue4	3B302	Shigeo Tokikuni, Hitoshi Kanoh	Objectives: To improve your English skills. Specifically, students are asked to read several English articles quickly and correctly, to write short sentences, to do dictation, and to make some presentations.	2013年度までに開講された「テクニカルライティング（英語）」(01CH702, 01CJ401)、「英語プレゼンテーション」(01CH703, 01CJ402) の単位を修得した者の履修は認めない。Identical to 01CH703.
01CJ405	Supply Chain Management	1	2.0	1, 2	FallAB	Tue3, 4	3E404	Hisashi Kurata	サプライチェーン・マネジメントを戦略、生産、物流、マーケティング、MISなどの経営活動の諸側面から講義する。	Identical to 01CB241, 01CD110, and 01CN201.
01CJ407	Production and Quality Management	1	2.0	1, 2	SprAB	Thu3, 4		Sumika Arima, Hironobu Kawamura	前後半に分けて、以下2つの内容を実施する。1) 生産・流通管理における問題解決方法を組み立てられる知識とスキルを習得させる。2) ものづくりにおける品質管理の概観を理解させる。	Identical to 01CD151 and 01CN324.
01CJ414	Topics in Advanced Information Technology III	1	1.0	1, 2	SprAB	Fri2	3B405	Shuichi Oikawa, Masazumi Nakamura, Mitsuru Ikei	一般に幅広く用いられているx86のアーキテクチャとそれがソフトウェアに与える影響、ソフトウェア開発ツールを利用したソフトウェア最適化手法、並列処理の概念と手法の理解を目的とした講義を行う。	Identical to 01CH714.
01CJ416	Identity & Vision Designing	1	1.0	1, 2	Annual	Intensive		Kazuhiro Shouno, Tsukasa Makino, Naomi Tsukino	The objective of this course is to unleash your talent and help you to live your own life. To live autonomously, it is essential to create your "Vision" by clarifying what you like, what you want to do in the future and how you want to live your life. In this course, you are guided to find your "Identity" and create your "Vision" through the lecture, individual works and group works. Also, you will learn from your peers, lecturers and guest attendees how diverse people are by listening to their experiences. We believe that this course will provide you a valuable opportunity to find your way and role in the society. On the last day, the attendees can have on-hand job-interview lesson and will receive appropriate advice if necessary.	2012年度以前の「アイデンティティ&ビジョンデザインワークショップ」の単位を修得したものの履修は認めない。Identical to 01CH748. CDP
01CJ417	Internship II for Advanced IT Experiences	0	2.0	1	Annual	by request		Hotaka Takizawa	Students aim to manage given tasks as a project member of an industry, which is decided by careful matching, and obtain good results. This course enables students to learn skills which are exploited in the business environment as well as obtain useful information to decide his/her future career through the valuable work experience. It is required to submit the final report.	Only for the students who have got the credit of "Internship I for Advanced IT Experiences" (01CJ101). CDP

subjects for students enrolled before 2015

urse Numb	Course Name	授業方法	Credits	Standard Academic Year	Course Offering Term	Weekday and Period	Classroom	Instructor	Course Overview	Remarks

urse Numb	Course Name	授業方法	Credits	Standard Academ	Course Offering Term	Weekday and Period	Classroom	Instructor	Course Overview	Remarks
01CJ010	Embedded Systems	4	3.0	1	FallAB	Mon2-4	3B311	Koji Hasebe, Yoshiki Yamaguchi et al.	This course introduces comprehensive and systematic trends of embedded systems. Through looking at several R&D experiences of car, mobile, and information products, students obtain required development techniques, process and so on.	平成27年度以前入学者対象。高度IT専修プログラムに限る。
01CJ015	PBL System Development B	4	4.5	1	FallABC	Mon5,6 by request	3B311	Shinichi Yamagiwa, Yasuhiro Hayase, Satoshi Saga, Chiemi Watanabe	Student teams do IT system development to solve it for a business problem of a real or virtual customer. On the basis of the technical investigation that they did in PBL system development A, proto typing, Student teams can raise completeness by the second or the third iteration. They accomplish each project in a PBL (Project Based Learning) form for autonomy and gets possible to get lessons learned from system development and project administration.	平成27年度以前入学者対象。高度IT専修プログラムに限る。
01CJ019	Research and Development Projects B	5	4.5	2	FallABC	Fri5,6 Intensive	3B311	Kazuhiko Kato, Kazuo Misue, Sho Tsugawa, Hideitsu Hino	学生主導で各自の研究開発活動の一環として「動くシステム」を構築するための開発プロジェクトを企画、運営し、企画力、システム開発力、コミュニケーション能力、マネジメント能力を含む総合的実践IT力を養成する。	平成27年度以前入学者対象。高度IT専修プログラムに限る。
01CJ020	Program Development on Embedded System	4	3.0	1	SprAB	Tue5,6 Thu2	3B311	Shinichi Yamagiwa	This class will teach the practical overview of the advanced functions equipped in mobile terminals, the conventional IT infrastructure and embedded systems. The attendee of this class will learn the skills to develop combined systems that connect these functions and the infrastructure, and will master the techniques for approaching innovative solutions, proposals and implementation skills.	平成27年度以前入学者対象。高度IT専修プログラムに限る。実践教育ネットワーク事業関連講義.機材の数以上の履修生数は許容できない.
01CJ107	Special Lecture on Recent IT Advances	1	2.0	1	SprAB	Thu5,6	3B311	Satoshi SAGA et al.	Lecturers from a wide range of industry will give us lectures on the various case studies of the impact of IT on society, the development trend in leading-edge technology, the innovative use of IT, and their company's interpretation regarding these trends.	平成27年度以前入学者対象。高度IT専修プログラムに限る。Co-shared with CS (01CJ201).Excludes who got credits of Special Lecture on Recent IT Advances in CS before 2012. CDP
01CJ108	Special Lecture on Social Innovation by ICT	1	2.0	1	FallAB	Thu3,4	3B311	Kazuo MISUE et al.	This class aims to foster human resources that cause social innovation by using ICT. Lecturers invited from industry gives talk about cases of innovation in various fields. Some group works are mixed into lectures. Through the group works, a creative process for innovation is learned.	平成27年度以前入学者対象。高度IT専修プログラムに限る。CDP
01CJ109	Service Oriented Architecture Engineering	1	2.0	2	SprAB	Thu3,4	3B406	Sachiyo Zushi,Masaki Ono,Koichi Nakamura,Buntaru Shizuki	This course gives students the concept of Service Oriented Architecture (SOA). It also covers techniques to develop a system based on SOA using various services including Web services.	