متطلب سابق	PC701 الحوسبة الذكية المتقدمة (Advanced Computational Intelligence)
------	Computational Intelligence is a relatively new area which is becoming more and more important in society today and in the future, especially due to the growing possibilities of gathering data and the need for intelligent systems. This course will cover several advanced topics in Computational Intelligence. In this seminar course, we will read, discuss and critique papers related to computational intelligence. It focuses on different topes such as: planning, probabilistic reasoning, reinforcement learning, evolutionary computation, natural language processing, constraint satisfaction, reactive systems, knowledge-based learning, robotics, vision, emergent behavior, and intelligent multiagent systems. Artificial Intelligence or Computational Intelligence courses are pre-requisites for this course. To achieve these course goals different teaching strategies will be applied such as direct, indirect, interactive, seminars and self-learning.
متطلب مصاحب	

متطلب سابق	PC702 مواضيع متقدمة في أنظمة الحاسوب والمعالجة المتوازية (Advanced Topics in Computer Systems and Parallel Processing)
------	Advanced Topics in Computer Systems and Parallel Processing is an advanced graduate-level course. In this seminar course, we will read, discuss and critique papers related to parallel architectures and parallel computing. It focuses on leading system architecture, high speed interconnects, and programming models that have been used for parallel and distributed computing environments. This course will cover advanced algorithms, and engineering tradeoffs in building large-scale parallel and distributed computing systems, as well as the high speed interconnects that bring them all together. Students will gain an in-depth understanding of research and development in computer systems and parallel computing, and their impact on computational sciences. Computer Architecture and Introduction to Computer Networks courses are pre-requisites for this course. To achieve these course goals different teaching strategies will be applied such as direct, indirect, interactive, seminars and self-learning.
متطلب مصاحب	

متطلب سابق	PC703 معالجة الصور و تمييز الأنماط المتقدمة (Advanced Image Processing and Pattern Recognition)
------	This course presents advanced topics and techniques used in digital image processing and computer vision. Image processing topics provide methods such as transformation, segmentation, and enhancement techniques in the frequency domain. Also this course discuss the geometry of multiple views, geometric attacks on image watermarking systems and the reconstruction of three-dimensional scene information using techniques such as stereo, structured light, voxel coloring, and space carving. This course Introduces the subject of three-dimensional object recognition techniques and the usage of local and global descriptors. This course guides the students to the state-of-art of computer vision research/applications through a term paper report and presentation. Image processing and pattern recognition course is pre-requisites for this course.
متطلب مصاحب	

متطلب سابق	PC704 مواضيع متقدمة في شبكات الحاسوب (Advanced Topics in Computer Networks)
------	The objective of this course is to introduce PhD students to a set of advanced topics in networking and lead them to the understanding of the networking research with a target of accomplishing research papers and making projects of their own. This course provides a broad coverage of some new advanced topics in the field of computer networks (TCP/IP, MPLS, Optical networks, wireless networks, mobile networks, VPN networks, Mobile IP, multimedia networks and new trends in networking such as emergence of networks in Nanotechnology, internet 2). The course includes hot topics research area in Layered communication architecture such as layers, services, protocols, layer entities, service access points, protocol functions; Advanced Routing algorithms; Advanced Network Congestion Control algorithms; Quality of service; MPLS; Internetworking; Performance Issues; VPN networks; VOIP; Wireless Networks and Mobile Networks: Sensor Networks, Ad hoc networks, and Pervasive computing; internet2; optical networks and Nanotechnology. The objective of this course is to introduce PhD students to a set of advanced topics in networking and lead them to the understanding of the networking research with a target of accomplishing research papers and making projects of their own. Computer network or wireless networks courses are pre-requisite for this course. To achieve these course goals different teaching strategies will be applied such as direct, indirect, interactive, seminars and self-learning.
متطلب مصاحب	

متطلب سابق	(Software Analysis and Design) تحليل وتصميم البرمجيات PC705
------	This course will be exposed to an in-depth software reuse techniques with an emphasis on software design patterns, design quality and metrics. Other techniques enabling reuse including, event-based programming, product-lines, software architectures and component-based development will also be focused. Advanced Soft Computing and Enterprise Systems courses are pre-requisites for this course. To achieve these course goals different teaching strategies will be applied such as direct, indirect, interactive, seminars and self-learning.
متطلب مصاحب	

متطلب سابق	(Research Seminar in Computing) ندوات علمية في الحوسبة PC706
------	Participation in seminars is an integral part of the graduate study to enhance knowledge, broaden research outlook, and improve thinking and communication skills of students. This course addresses emerging and advanced topics in computing. It aims to prepare Ph.D. candidates to conduct research across the range of the disciplines that cover Information and Communication Technology (ICT) research, including Computer Science, Information Technology, Information Systems, Computer Networks, and Software Engineering. The specific topics will vary from semester to semester, as will associated the new issues and trends of ICT. In general, it covers different aspects for the technical end, organizational and social informatics for considering societal needs in ICT. Student are expected to spend 3 hours per week participating in workshop activities and 12 hours per week in reading, preparing for workshops completing learning tasks, communicating with other students and workshop leaders in discussion forums, and undertaking formal assessment work. To achieve the goals of this course, many of teaching strategies can be followed such as direct, indirect, interactive, seminars and self-learning.
متطلب مصاحب	

متطلب سابق	PC707 مواضيع متقدمة في إدارة قواعد البيانات (Advanced Topics in Database Management)
------	This course covers a number of advanced topics in development of database management systems (DBMs) and the application of DBMSs in modern applications. Additionally, it explores recent research directions that lie at the intersection of database systems Topics to be discussed include advanced concurrency control and recovery techniques, query processing and optimization strategies for relational database systems, advanced access methods, parallel and distributed database systems, extensible database systems, data analysis on large databases.
متطلب مصاحب	

Program Elective Courses (9 credit hours)

متطلب سابق	PCL701 أنظمة المؤسسات (Enterprise Systems)
------	This course on the advanced knowledge of information systems integration for in organizations. It explores tools and techniques for systems integration as well as proven management practices for integration projects. Besides to the fundamentals of enterprise systems, this course covers its tools, frameworks, methodologies, myriad ways and impacts of implementing Enterprise Resource Planning (ERP) on organizations across various disciplines of organizations. It will discuss many of the enterprise cases, applications, issues, challenges, emerging trends and extrapolate future developments in the field. This course is required at least any undergraduate/graduate course on the fundamentals of IT Management or Management ISs (MIS). The teaching and learning methods will be variedas self-learning, research proposals and papers, case studies, papers reviews, technical reports, direct, indirect, interactive workshops and seminar presentations by leaners.
متطلب مصاحب	

متطلب سابق	PCL702 تخطيط نظم المعلومات الإستراتيجية (Strategic Information System Planning)
------	The Strategic ISs Planning (SISP) course is a key graduate-level seminar in the business Information Systems (IS)/ Information Technology (IT) concentration. It address many research issues about the strategic roles of Chief Information Officer (CIO), delivering organization value throughIT, deriving a firm's strategy for gaining and sustaining competitive advantage through IT, and the current real world challenges of IT management.The course will discuss many of the SISP cases, applications, challenges, emerging trends and extrapolates future developments in the field. It also will explore the approaches for managing ISs function in organizations and ensuring alignment with business strategies as self-learning, research proposals, case studies, papers reviews, technical reports, direct, indirect, interactive workshops and seminar presentations by leaners. SISP course is required at least one course,as a pre-requisite, on the fundamentals of IT management or Management ISs (MIS) at graduate or undergraduate level.
متطلب مصاحب	

متطلب سابق	PCL703 مواضيع متقدمة في ضمان سلامة المعلومات (dvanced Topics in Information Security Assurance)
------ متطلب مصاحب -------	The objective of this course is to introduce PhD students to a set of advanced topics in information security assurance and lead them to the understanding of the information security assurance research with a target of accomplishing research papers and making projects of their own. This seminar course will provide PhD students with advanced topics in information security assurance include the overview of computer security and related mathematical support. also this course covered hot research areas such as study of conventional and modern cryptosystems, information assurance and computer security, computer emergency incident team, network security techniques such as IDS, IPS, IIDS and computer forensics; and their applications to cryptography and network security will be described. Information security and computer network courses are pre-requisites for this course. To achieve these course goals different teaching strategies will be applied such as direct, indirect, interactive, seminars and self-learning.

متطلب سابق	PCL704 مواضيع متقدمة في الحوسبة (Advanced Topics in Computing)
------ متطلب مصاحب -------	This course provides a specialized study within an area of Computing, guided by a supervisor. Topics include theoretical and applied aspects of Computing. Combines guided reading and research with a significant individual or group project component. In this seminar course, we will read, discuss and critique papers related to Computing. It focuses on recent offerings include software specification and validation, parallel algorithms and architectures, client-server systems and advanced object-oriented design (Java). Advanced topics: Databases, performance analysis, computer simulation, Java programming, Unix programming, human and computer interaction, cryptography with financial applications and biometric identification. To achieve these course goals, different teaching strategies will be applied such as direct, indirect, interactive, seminars and self-learning.

متطلب سابق	PCL705 المعلوماتية الحيوية (Bioinformatics)
------ متطلب مصاحب -------	This course will provide students advanced knowledge to the theory and practice of bioinformatics and computational biology. Students will read, discuss and critique papers related to bioinformatics. Research Topics include: molecular biology databases, the analysis of macromolecular sequences (search, alignment, programming libraries), genome assembly and next-generation sequencing, protein-protein interaction and networks, phylogenetics, protein structure and prediction, molecular dynamics and docking, genetic linkage and association, gene expression arrays, drug discovery and proteomics. Fundamental of artificial intelligence course is pre-requisite for this course. To achieve the goals of this course variation of teaching strategies will be applied such as direct, indirect, interactive, seminars and self-learning.

	PCL706 استكشاف المعرفة وتنقيب البيانات (Knowledge Discovery and Data Mining)	متطلب سابق
This course provides an overview of Knowledge Discovery and Data Mining (KDD). KDD deals with data integration techniques and with the discovery, interpretation and visualization of patterns in large collections of data. Topics include data warehousing and data preprocessing techniques; data mining techniques for classification, regression, clustering, deviation detection, and association analysis; and evaluation of patterns minded from data. The work discussed originates in the fields of artificial intelligence, machine learning, statistical data analysis, data visualization, databases, and information retrieval. Several scientific and industrial applications of KDD will be described. Students expected to read assigned textbook chapters and research papers, and work on implementation/research projects that cover the different stages of the KDD process.		------
		متطلب مصاحب