

(2 + 3) 4	لغة برمجة (1) Programming language	CS 111D
المتطلب السابق : لا يوجد	<p>This is a starting level programming course which covers topics such as control structures, iteration statements, methods, parameter passing, library methods, and arrays. Implementations and programs developments will be done using Java programming language. It is designed to achieve the following objectives</p> <ol style="list-style-type: none"> 1- Provides an introduction to basic, concepts, terminologies and methodologies of structured programming. 2- Gives experience in applying algorithm design and depicting methods like pseudo code and flowcharts. 3- Develops practical skills needed for coding, tracing, debugging, and building solutions to problems, with the use of a high-level programming language. 	

(2 + 3) 4	لغة برمجة (2) Programming language(2)	يكتب رمز ورقم المقرر
المتطلب السابق: CS110D لغة برمجة (1)	<p>This course develops the students' ability to continue understanding and writing programs using Java programming language. In this course, students will deeply understand the architecture of Object Oriented programming and utilization. Inheritance, Encapsulation, Abstraction, and Polymorphism will be thoroughly explained and utilized. Students will also learn graphics and Java 2D and learn how to use and develop Graphical User Interface (GUI) in order to communicate with different applications. Dealing with files and streams will be studied in this course as well. The main objective in this course is to develop skills required to design, implement, and debug solutions of problems using the object-oriented approach</p>	

(1+3)3	هياكل البيانات Data Structures	CS 212D
المتطلب السابق: لغة CS110D برمجة (1)	<p>This course describes: Abstract data types and their implementation; Linked lists, trees, binary trees, graphs, and multilinked structures; Brief introduction to algorithm analysis; Sorting and searching techniques and performance; Topics include linear structures (lists, stacks and queues), nonlinear structures (trees and graphs)</p> <p>The course objectives can be summarized as follows:</p> <ul style="list-style-type: none"> • Be familiar with basic techniques of algorithm analysis. • Be familiar with the concept of recursion. • Master the implementation of linked data structures such as linked lists, stacks, and queues. • Be familiar with advanced data structures such as balanced search trees, graphs and hash tables . • Master the standard data structure library of a major programming language. • Master analyzing problems and writing program solutions to problems using the above techniques. 	

(1+3)3	لغة برمجة متقدمة Advanced Programming language	CS 313D
المتطلب السابق: لغة CS111D برمجة (2)	<p>This course will introduce students to .NET Programming using the C# programming language. Emphasis will be placed on understanding not only the syntactical features of the language, but also how to effectively use the design of the language to develop robust software. The course assumes at least one year of programming in Java . Hence the main objective of the course is give the students a deep understanding of advanced programming concepts such as encapsulation ,polymorphisms and generic data types using the c# language.</p>	

(0+3)3	مبادئ لغات البرمجة Programming Languages Concepts	CS 430D
<p>المتطلب السابق : CS212D هياكل بيانات CS207D عمارة الحاسب</p>	<p>This course aims to introduce students to the concepts found in a variety of programming languages. Programming languages as tools for problem solving and a brief introduction to languages from a number of different paradigms. The course objectives can be summarized as follows:</p> <ul style="list-style-type: none"> • To understand the fundamental concepts of various programming languages and the critical design issues related to their utilization . • To compare major programming language paradigms: imperative and functional. • To introduce the student to use syntax, semantics, types and implement subprograms. 	

(2+2)3	تطوير تطبيقات للشبكة العنكبوتية Web Application development	CS486D
<p>المتطلب السابق : IS220D اساسيات قواعد البيانات</p>	<p>This course deals with the study of the technologies used to design and implement multimedia and dynamic web sites. The focus of the course will be hands-on development of professional web-based applications. Students will study a variety of software technologies relevant to web design and implementation. Several applied topics are covered in class: programming languages, scripting languages, network programming, client/server computing, security, and multi-media systems design. The objectives of the course can be summarized as follows:</p> <ul style="list-style-type: none"> • Cover the common open source systems and languages • Recognize the range of Web development • Apply all needed tools and knowledge to develop a website from scratch. • Demonstrate the knowledge of Client-side coding, Server-side coding, and Database Technology. • Design and build an interactive and friendly website. 	

(0+3)3	تصميم المترجمات Compilers Design	CS 431D
المتطلب السابق : CS 430D مبادئ لغات البرمجة	<p>This course covers: the structure of compilers; lexical analysis; syntax analysis including LL, SLR, LALR and LR parsers; type checking; run-time environments; intermediate code generation; and compiler-construction tools .In this course students will develop a deeper understanding of Compilers technology. Students will learn the most important techniques for the representation and generation of Languages. Those techniques will be then applied to the construction of a compiler for a programming language. In particular, during this course the student will learn how to build the different parts of a Compiler: Lexical Analyzer, Parser, Code Generation and Optimization.</p>	

الساعات المعتمدة:3 (3 ساعات نظري+1 ساعة عملي)	تنظيم الحاسبات Computer Organization	عال 206 د CS 206 D
المتطلب السابق للمقرر: تصميم منطق رقمي عال 105د	<p>This course introduces the basic computer organization; register, arithmetic-logic unit, and control unit; machine representation of data and instructions; machine language and assembly language programming; addressing modes; interrupts and input/output programming. This course is an introduction to explain how computers are designed and how it's work. It introduces the student to foundational of computer organization including combinational and sequential circuits, microarchitecture and instruction set architecture, assembler programming, internal data representations and essential hardware components that support operating systems. It is intended to give students an overview of the entire computer machine organization.</p>	

<p>الساعات المعتمدة: 3 (3 ساعات نظري+1 ساعة عملي)</p>	<p>عمارة الحاسب Computer architecture</p>	<p>عال 207 د CS 207 D</p>
<p>المتطلب السابق للمقرر: تنظيم الحاسبات عال 206د</p>	<p>This course introduces the key concepts that are likely to be included in the design of any modern computer system; the basic metrics by which new and existing computer systems may be evaluated; the peripherals, their interconnection and underlying data operations to understand the design of computer systems. The course examines different computer implementations and assess their strengths and weakness, explains how an instruction is executed and how basic instruction level parallelism using pipelining. This course explains the effect of memory latency and describes the use of memory hierarchy to reduce the effective memory latency.</p>	

الساعات المعتمدة:3 (3 ساعات نظري+1 ساعة عملي)	عمارة و برمجة الحاسبات المتوازية Parallel computers Architecture and Programming	عال 408 د CS 408 D
المتطلب السابق للمقرر: اساسيات شبكات الحاسب شال 221د	This course covers: Design and principles of parallel architectures, and parallel languages; Naming, latency, bandwidth, and synchronization in parallel machines; Distributed memory, shared memory, message passing, and data flow; Specification of parallelism, inter-process communication and synchronization, design of parallel programs for scientific computation and distributed systems; Survey of existing multiprocessor systems. The course introduces the fundamental principles and trades involved in designing modern parallel computers, as well as the programming techniques to effectively utilize these computers. The course explains parallel computers, shared data, synchronizing threads, the latency and band-width associated with communication, exploits the potential processing power of the parallel computers by understand how to write efficient parallel programs. The course introduces the student to design a good parallel program with understanding how parallel machines are built and vice-versa.	

الساعات المعتمدة:3 (3 ساعات نظري+1 ساعة عملي)	النظم الموزعة Distributed Systems	عال 409 د CS 409 D
المتطلب السابق للمقرر: نظم التشغيل عال 340د	This course aims to expose students to the complexities involved in designing and building distributed applications. Increase in-depth understanding of the principle paradigms used in this area. Main themes: Paradigms of distributed computing including message passing; remote procedure call; remote method invocation; client server computing; shared file systems; distributed objects; time and global states; coordination and agreement; Distributed algorithms and parallel computing; and replication and fault tolerance. The course aims to teach students how distinguish among LANs, WANs, and Internetworking, how distributed message sending and how data conversion and transmission and sockets, message sequencing, buffering, retrying, and dropping messages. The course introduces the distributed service design, the data link layer and transport layer services and the core distributed algorithms.	

الساعات المعتمدة:3 (3 ساعات نظري+1 ساعة عملي)	نظم التشغيل Operating Systems	عال 340 د CS 340D
المتطلب السابق للمقرر: هياكل البيانات عال 212د	<p>This course aims to provide a clear description of the theoretical concepts that underlie operating systems. This course demonstrates the history of the operating systems and provides knowledge of operating systems concepts. The course introduces the principles of processes including inter-process communication, process scheduling, deadlocks, the principles of input / output that includes I/O hardware and software, Memory and File systems management that includes swapping, paging, virtual memory, and page replacement algorithms. The students will experience lab work in groups and will be introduced to the modern concepts of the operating systems using Unix/Linux and Windows.</p> <p>This course will provide an introduction to design and performance evaluations of modern operating systems. Mapping and binding of addresses. Organization of multiprogramming and multiprocessing systems; interrupts, process model, and interlocks. Resource allocation models and problem of deadlocks. Scheduling, synchronization. Memory management, virtual memory. I/O control, and file systems.</p>	

الساعات المعتمدة:2 (1 ساعة نظري + 2 ساعة عملي)	موضوعات مختارة(2) Selected Topics (2)	عال 391 د CS 391D
المتطلب السابق للمقرر:	<p>This course will be determined based on the Selected Topic. Upon completing this course the student will have learned, through appropriate classroom and laboratory experiences, Operational Research, and/or Advanced Modeling and Simulation and/or Advanced Parallel Computation</p>	

ساعات المقرر (3+1)3	Algorithms Design and Analysis تحليل وتصميم خوارزميات	CS 220D
<p>المتطلب السابق : Discrete Structures CS 100D, Data Structures CS 212D</p> <p>تراكيب محددة عال 100د, هياكل بيانات عال 212د</p>	<p>This course is a study of algorithm design, algorithm complexity analysis, and problem complexity analysis. Design techniques analyzed will include divide-and-conquer, dynamic programming, greedy algorithms, backtracking, and branch-and-bound.</p> <p>The course - Covers the common algorithms, algorithmic paradigms, and data structures utilized to resolve problems .</p> <p>Introduces basic algorithm performance measures and analysis techniques</p> <p>Teaches techniques of design and analysis of algorithms.</p> <ul style="list-style-type: none"> -Uses, Compares, and analyzes the primary sorting and searching algorithms. -Identifies and applies the divide-and-conquer, greedy, dynamic programming, backtracking, and branch-and-bound methods. - Identifies differences among best, average, and worst case running times. - Explains time and space tradeoff. 	

ساعات المقرر (3+1)3	Advanced Algorithms	CS 321D
<p>المتطلب السابق : Algorithms Design and Analysis / CS 220D</p> <p>تحليل وتصميم الخوارزميات عال 220د</p>	<p>This course covers: the advanced level of algorithms design and analysis where it</p> <ul style="list-style-type: none"> • Explain the main advanced paradigms of algorithm design. • Design and analysis of modern algorithms with proof in written form. • Use, compare, classify and analyze the advanced algorithm design techniques. • Describe and explain the linear recurrences and matrix operations. • Explain an NP-hard computational optimization problem, an approximation algorithm for NP-hard and determine its approximation factor. • Explain the appropriateness of algorithms as a solution to a given problem and its efficiency. • Analyze and use specific algorithms in network flows, computational geometry, online and parallel algorithms. 	

ساعات المقرر (3+1)3	Formal Language and automata اللغات المنضبطة و النظرية الالية	CS 322D
المتطلب السابق : Discrete Structure CS 100D التراكيب المحددة عال 100د	This course covers: Regular sets: finite automata, regular expressions, equivalences among notations, and methods of proving a language not to be regular; Context free languages: grammars, pushdown automata, normal forms for grammars, and proving languages non-context free; Turing machines: equivalent forms, un-decidability; Closure properties, pumping lemmas, and decision algorithms; Introduction to computability	

ساعات المقرر (1+0)1	Professional ethics اخلاقيات المهنة	CS 180 D
المتطلب السابق : لا يوجد	<p>مقدمة في أخلاقيات المهنة في الحاسب ، مميزات أخلاقيات المهنة في الحاسب وهياكلها، قوانين وتشريعات ومعايير استخدام الحاسب والانترنت ، السرية وتقنية المعلومات، الملكية الفكرية في الحاسب والانترنت، الثقة في الحاسب، أساسيات إصدار القرارات في أخلاقيات المهنة، السلوك الإجرامي في التعامل مع الحاسب، أخلاقيات المهنة في البرمجيات.</p> <p>The course main objectives</p> <ol style="list-style-type: none"> 1. Introducing the concept of ethics and it's rules. 2. Introducing eight ethical theories and differences between them. 3. covers network communications. 4. Identifies Intellectual property and how to protect. 5. Identifies information privacy issues. 6. Introducing network security issues. 	

ساعات المقرر (3+0)3	Discrete Structure تراكيب محددة	CS 100D عال 100د
المتطلب السابق : لا يوجد	<p>This course provides a study of problem Solving and Algorithms, models for discrete structures in computer science drawn from logic, set theory, relations, group theory, ring, field theory, proof techniques, permutations, combinations, summations, recursion and graph theory.</p> <p>The course main objectives includes</p> <ul style="list-style-type: none"> • Introduce the student to the basic mathematical foundation of structures and algorithms that will be used in later computer science courses. • Introduce the student to basic concepts in logic, Boolean algebra and proof techniques. • Introduce the student to fundamental concepts of computability theory. 	

(1+3)3	التفاعل بين الإنسان و الحاسب Human Computer Interaction	CS 351 D
المتطلب السابق : هياكل بيانات عال 212د	<p>This course is an introduction to Human-Computer Interaction (HCI), a discipline concerned with the design, evaluation, and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them. The course considers the inherently multi- and interdisciplinary nature of HCI and situates various HCI issues in the organizational and societal contexts. It introduces theories of human psychology, principles of computer systems and user interfaces designs, a methodology of developing effective HCI for information systems, and issues involved in using technologies for different purposes. It is intended to give students an overview of the entire HCI field by covering most aspects of it.</p>	

(1+3)3	معالجة الصور والرؤية بالحاسب Computer vision and image Processing	CS 361 D
المتطلب السابق : هياكل بيانات عال 212د	<p>This course is an introduction to Computer Vision and Image Processing, a discipline concerned with the role of computer vision, signals and their transformation, image processing, image Recognition, images Retrieval and with the study of major phenomena surrounding them. It introduces the principles of Computer Vision and Image Processing, and issues involved in using technologies for different purposes. It is intended to give students an overview of the entire Computer Vision and Image Processing field by covering most aspects of it.</p>	

(2+3) 4	موضوعات مختارة (3) Selected Topics (3)	CS 362 D				
<p>المتطلب السابق : لا يوجد</p>	<p>Will be determined based on the Selected Topic Suggested topics:</p> <ul style="list-style-type: none"> ▪ Computational Geometry ▪ Advanced Rendering and Advanced Techniques in Computer Graphics ▪ Visualization and Game Engine Programming ▪ Virtual Reality <p>Objectives:</p> <table border="1" data-bbox="624 656 1353 2022"> <tr> <td data-bbox="624 656 1353 837"> <p>Upon completing this course the student will have learned, through appropriate classroom and laboratory experiences, in Computational Geometry and one of the following topics: OR in new trends in Graphics and Visual Computing</p> </td> </tr> <tr> <td data-bbox="624 837 1353 1019"> <p>Computational Geometry</p> <ol style="list-style-type: none"> 1. Be aware of algorithms for certain geometric tasks 2. Be able to select algorithms appropriate to particular situations </td> </tr> <tr> <td data-bbox="624 1019 1353 1697"> <p>Advanced Rendering and Advanced Techniques in Computer Graphics</p> <ol style="list-style-type: none"> 1. Describe several transport equations in detail, noting all comprehensive effects. 2. Describe efficient algorithms to compute radiosity and explain the tradeoffs of accuracy and algorithmic performance. 3. Describe the impact of meshing schemes. 4. Explain image-based rendering techniques, light fields, and associated topics. 5. Describe the techniques identified in this section. 6. Explain how to recognize the graphics techniques used to create a particular image. 7. Implement any of the specified graphics techniques using a primitive graphics system at the individual pixel level. 8. Use common animation software to construct simple organic forms using metaball and skeleton. </td> </tr> <tr> <td data-bbox="624 1697 1353 2022"> <p>Visualization and Game Engine Programming</p> <ol style="list-style-type: none"> 1. Describe the basic algorithms behind scalar and vector visualization. 2. Describe the tradeoffs of the algorithms in terms of accuracy and performance. 3. Employ suitable theory from signal processing and numerical analysis to explain the effects of visualization operations. 4. Describe the impact of presentation and user </td> </tr> </table>	<p>Upon completing this course the student will have learned, through appropriate classroom and laboratory experiences, in Computational Geometry and one of the following topics: OR in new trends in Graphics and Visual Computing</p>	<p>Computational Geometry</p> <ol style="list-style-type: none"> 1. Be aware of algorithms for certain geometric tasks 2. Be able to select algorithms appropriate to particular situations 	<p>Advanced Rendering and Advanced Techniques in Computer Graphics</p> <ol style="list-style-type: none"> 1. Describe several transport equations in detail, noting all comprehensive effects. 2. Describe efficient algorithms to compute radiosity and explain the tradeoffs of accuracy and algorithmic performance. 3. Describe the impact of meshing schemes. 4. Explain image-based rendering techniques, light fields, and associated topics. 5. Describe the techniques identified in this section. 6. Explain how to recognize the graphics techniques used to create a particular image. 7. Implement any of the specified graphics techniques using a primitive graphics system at the individual pixel level. 8. Use common animation software to construct simple organic forms using metaball and skeleton. 	<p>Visualization and Game Engine Programming</p> <ol style="list-style-type: none"> 1. Describe the basic algorithms behind scalar and vector visualization. 2. Describe the tradeoffs of the algorithms in terms of accuracy and performance. 3. Employ suitable theory from signal processing and numerical analysis to explain the effects of visualization operations. 4. Describe the impact of presentation and user 	
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	<p>interaction on exploration.</p> <p>5. To be aware of the range of possibilities for games engines, including their potential and their limitations</p> <p>6. To use a games engine to construct a simple game</p>
	<p>Virtual Reality</p> <p>1. Describe the optical model realized by a computer graphics system to synthesize stereoscopic view.</p> <p>2. Describe the principles of different viewer tracking technologies.</p> <p>3. Explain the principles of efficient collision detection algorithms for convex polyhedra.</p> <p>4. Describe the differences between geometry- and image-based virtual reality.</p> <p>5. Describe the issues of user action synchronization and data consistency in a networked environment.</p> <p>6. Determine the basic requirements on interface, hardware, and software configurations of a VR system for a specified application.</p>
	<p>Any Other New Topic.</p>

3(3 theory and 1 tutorial)	Multimedia system	CS350D
CS212D	<p>This course introduce principles and current technologies of computer-based multimedia systems. They will study current media types (images, video, audio, graphics etc) and how they are used to create multimedia content. Issues in effectively representing, processing, and retrieving multimedia data will be addressed. The students will be familiarized with the range of tools used in creating computer-based multimedia</p> <p>Objectives</p> <p>Discuss privacy and copyright issues in the context of multimedia</p> <ul style="list-style-type: none"> -Describe The requirements for multimedia system - Understand challenges for multimedia systems - Critique essentials for multimedia application in terms of representation, compression storage and computers and networks systems support 	

3(3 theory and 1 tutorial)	Computer Graphics	CS360D
<p>تحليل وتصميم خوارزميات عال 220د, مبادئ الجبر الخطي عرض م242</p>	<p>This course aims to introduce students to the concepts and algorithms of 2D/3D computer graphics and the applications of computer graphics technologies. Moreover, it provides the fundamentals of input and display devices, output primitives and their attributes, two- and three-dimensional transformations and clipping, windowing techniques, curves and curved surfaces, three-dimensional viewing and perspective, hidden surface removal, illumination and color models, graphics API's, and 3-D modeling tools.</p> <p>Objectives .Learning fundamental computer graphics techniques Understanding the concepts and the algorithms of 2D/3D computer graphics and the applications of computer graphics technologies providing students with a foundation in graphics providing students with Applications programming</p>	

3(3 theory and 1 tutorial)	Artificial intelligence	CS370D
<p>تحليل وتصميم خوارزميات عال 220 د, لغة برمجة (2) عال 111د</p>	<p>This course provides a study of introductory and advanced topics in artificial intelligence, intelligent agents, and knowledge-based systems, Solving problems by searching, Informed search algorithms, First Order Logic, Second Order Logic, Lisp, Prolog, Game, and neural network</p> <p>Course Objectives</p> <ul style="list-style-type: none"> •Understand the fundamental concepts of Artificial Intelligence •Understand different methods of search and optimization in AI •Able to develop small application using heuristic functions to solve any search problem in AI •Understand the learning strategies •Understand and implement searching techniques •Understand the fundamental concept of logic in AI <p>Understand the knowledge areas</p> <ul style="list-style-type: none"> •Learn PROLOG language used to implement Artificial Intelligence Systems 	

3(3theory+1 tutorial)	Software engineering	CS385D
اساسيات قواعد البيانات نال 220د	<p>This course aims at teaching the student fundamental knowledge in software engineering. In particular, they will be exposed to learning the main software engineering strategies in developing computer programs. The main stages of development and the whole lifecycle including requirements, design, development, verification and validation, testing and deployment; advantages and disadvantages will be covered in this course. Throughout the whole course students will be using UML modeling language to create models of software for their practical exercises to get hands-on skills in software development</p> <p>Course Objectives This course explains what software engineering is and why it is important. It also explains the concepts of software processes and software process models and shows the activities that are involved in the systems engineering processes. The course also explains the difference between the software verification and software validation. The course also discusses the Unified Modeling Language (UML).</p>	

3(3 theory and 1 tutorial)	Selected topic 1	CS372D
هياكل بيانات عال 212د	<p>Will be determined based on the Selected Topic Suggested topics</p> <ul style="list-style-type: none"> • Soft Computing • Natural Language Processing • Database Management Systems • Object-Oriented Systems Design • Islamic Electronic Commerce • Software Project Management • Knowledge-based Systems <p style="text-align: center;">Computing and Islamic Studies</p>	

3(3 theory and 1 tutorial)	Robotics Fundamentals	CS471D
<p>الذكاء الاصطناعي عال 370د</p>	<p>The course is intended to understand the underlying principles which distinguish robot control programs from computer programs. Their specific features are presented by introducing the general notion of situated agent. In the same perspective behavior-based systems are also considered: the direct coupling of perception to action and the dynamic interaction with the environment are discussed as a general method to implement autonomous robot control including legged and humanoid robotics. Multi-robot systems are also presented.</p> <p>Course Objectives</p> <p>The aim of the course is that to provide a student with practical tools to understand and implement programs which are able to control autonomous vehicles. The general notion of situated agent is presented by introducing behavior-based systems, the direct coupling of perception to action and the dynamic interaction with the environment. A number of examples from industrial robotics and autonomous vehicle control are discussed with some experimental lectures using available moving platforms. The locomotion problem for the so called legged-robots is also presented discussing various kinds of mechanical structures, humanoids included</p>	

(2 theory)	Graduation project 1	CS487D
<p>المتطلب السابق للمقرر: يتأكد القسم من اكمال الطالبة بنجاح للتالي: (90 وحدة دراسية على الاقل +عال385+نال350د)</p>	<p>The student is required to complete a project that demonstrates his intellectual and comprehensive computer skills and knowledge. This course allows the student to deal with a real and practical computing project. The course enable the student to define and state a problem, figure a solution or solutions to the problem, and then define the system requirements for the problem. This course also enables the student to write a professional project proposal and manage the project in terms of feasibility and scheduling. The course also let the student develop skills like time management, communication, and oral presentation</p> <p>Course Objectives This course provides teamwork of students with a thorough guideline for survey and research to design, develop, and implement different fields covering “one or more” the CS Knowledge areas Understanding of a software topic survey and research Experience in designing and developing a relatively large software project Experience in documenting and presenting a major piece of software.</p>	

(2 theory)	Graduation project 2	CS488D
<p>مشروع تخرج (I) عال 487د</p>	<p>The course involves a scientific project in any area of computer Sciences. The course must be taken by a small group of student (4-5). This course is the continuation from the Graduation Project (I) Course Objectives Implement and testing the proposed project in the Graduation Project Proposal Cover “one or more” the CS Knowledge areas</p>	

(2 theory)	Internship	CS489D
<p>اكمال 90 وحدة دراسية على الأقل بنجاح</p>	<p>Internship course is an important component of the CCIS - Computer sciences (CS) program. This course is designed to provide an opportunity for CS students to gain a supervised practical experience in computer environment of an approved department, firm or agency in KSA. The students will gain a valuable on-site working experience. It further allows the students to develop skills like: communication, team work and problem solving skills which will enable them in joining a competitive job market in their fields. Cooperative Training Office (CTO) should coordinate with students to apply internship. The student and CTO should also submit a written plan for approval before taking-up the internship. All internships are subject to approval by the Internship Coordinator of the college. Note: maximum number of students 35 per class.</p> <p>Course objectives provide a supervised experience in CS environment with an aim of helping the PNU students to develop an insight into the professional demands of the workplace recognize real-world opportunities and constraints such that they are better prepared to enter their future careers</p>	