Description for IT department Courses (Mul)

Year 1	Course Name :	Mathematics 1			
Term 1	Type :	College			
	Course ID	TECH 1301		Hours	3
Disc	In this course , It is cover the following main math topics Limits and Continuity , Differentiation , Applications of Derivatives and Integration				
Objective	The goal of this course is to introduce students to three main topics of calculus; namely, Limits, Differentiation and integration (methods and applications). The student solve algebraic equations. The student solve inequalities involving the square root . The student Know addition and double-angle formulas for trigonometric functions The student use them to express values of trigonometric functions.				
Outcomes	Course outcomes: On completion of this course students will be expected to: • Be able to solve algebraic equations and inequalities involving the square root. • Know addition and double-angle formulas for trigonometric functions and use them to express values of trigonometric functions. • Be able to recognize odd, even, periodic, increasing, decreasing functions. • Understand the operation of composition of functions and the concept of functional inverse. • To able to recognize linear, quadratic, power, polynomial, algebraic, rational, trigonometric, exponential functions and sketch their graphs. • Be able to calculate limits. know derivatives of power, trigonometric functions and know the basic rules of differentiation				
Year 1	Course Name :	Statistics			
Term 1	Type :	College			
	Course ID	TECH 1303		Hours	3
Disc	In this course we will cover the following statistics topics: Statistics Basics - Simple Random Sampling - Other Sampling Designs- Experimental Designs - Organizing Data - Descriptive Measures – Probability - Random Variables and Sampling Distributions - Discrete Random Variables				
Objective	• Understand sampling distributions of sample means and sample proportions • Estimate a population mean and a population proportion from a sample; • Compute simple probabilities of events. • Distinguish marginal, joint, and conditional probabilities; • Understand and apply the concept of independence of events.				
Outcomes	Upon completion of this course the student should be able to				

	• Compute probabilities by modeling sample spaces and applying rules of permutations and combinations, additive and multiplicative laws and conditional probability • Compute probabilities based on practical situations using the binomial and normal distributions	

Year 1 Term 1	Course Name :	Principles of Management		
	Type :	College		
	Course ID	TECH 1305	Hours	3
Disc	The basic management functions are analyzed to provide a basic conceptual approach to management. Concentration will be on the main managerial process, planning, organizing, leading and controlling. Organizational decision making activities are a main topic as they lead to and promote efficient and effective management. This course aims TO provide the student with the necessary academic background to prepare him/her for specialization in Business Administration.			
Objective	1. Understand the meaning, role and professional nature of management. 2. Introduce the students to the basic concepts, levels, functions, history, systems and principles of the management process (planning, organizing, directing, leadership, and controlling). 3. Introduce the management schools and theories. 4. Understand what management by objectives (MBO) means. 5. Develop modeling skills such as decision making, communications, motivation, centralization and delegation of authority. 6. Overview on Managing in a Global Environment, Managing Diversity, Managing Social Responsibility and Ethics			
Outcomes	− An ability to know how to planning. − An ability to choose the Structural occasion of the institution − An ability to make the decision − Understand the nature of management as an art and a science and give a brief overview of management schools. − Develop modeling skills. − Understand what management by objectives (MBO) means. − Develop modeling skills such as decision making, communications, motivation, centralization and delegation of authority.			
Year 1 Term 2	Course Name :	Mathematics 2		
	Type :	College		
	Course ID	TECH 1302	Hours	3
Disc	This course gives an introductory treatment of linear algebra that is suitable for a first undergraduate course. Its aim is to present the fundamentals of linear algebra in the clearest			

	possible way. The course will cover the following important topics
	- Systems of Linear Equations and Matrices
	- Determinants
	- Euclidean Vector Spaces
	- General Vector Spaces
Objective	**In this course the students should understand the following**
	1. Systems of Linear Equations
	2. Gaussian Elimination
	3. Matrices and Matrix Operations
	4. Inverses; Algebraic Properties of Matrices
	5. Elementary Matrices and a Method for Finding
	6. More on Linear Systems and Invertible Matrices
	7. Diagonal, Triangular, and Symmetric Matrices
	8. Applications of Linear Systems
	9. Determinants by Cofactor Expansion
	10. Evaluating Determinants by Row Reduction
	11. Properties of Determinants; Cramer's Rule
	12. Vectors in 2-Space, 3-Space, and n-Space
Outcomes	Upon completion of this course the student should be able to:
	• Solve linear equation system
	• Find the nxn matrix inverse, row operations, matrices properties.
	• Find matrices addition, subtraction and products
	• Understand matrix type, Diagonal, upper and lower matrix and triangular matrix
	• Understand determinates
	• How determinant can be use to find matrix inverse
	• Cramer's rule
	• Properties and operations on determinant.
	• Vectors in 2 and 3 and n-spaces
	• Norm Vector.
	• Dot product vectors

Year 1	Course Name :	Introduction to Communications		
Term 2	Type :	College Elective Course 1		
	Course ID	TECH 1204A	Hours	2
Disc	In this course we will cover the following important topics Signals Convey Intelligence, Electrical Introduction to Transporting Electrical Signals , Quality of Service and Telecommunication Impairments , Transmission and Switching: Cornerstones of a Network , Digital Networks , Signaling , Local and Long-Distance Networks , Concepts in Transmission Transport , Data Communications , Enterprise Networks I: Local Area Networks , Enterprise Networks II: Wide Area Networks , CCITT Signaling System No. 7 , Image Communications			
Objective	Gives the students a complete knowledge about the main Concepts, terminologies and fundamentals of Telecommunication Understand the Electrical Signals Signal Modulation Convert signal analogs to digital data			

	Understand TV Signals (Sound, Color) Understand the radio signals			
Outcomes	After complete this course the student should understand the basics of the following main topics in Telecommunication: • Electrical Signals • Signaling • TV and satellite communication concepts • Voice and Video signals • Receiver and transmitter devices			
Year 1 **Term 2**	**Course Name :**	**Programming 1**		
	Type :	**specialization**		
	Course ID	**GTEC 1302**	**Hours**	**3**
Disc	This course introduces the fundamental principles of computer programming, flowcharts, variables, input output statements, functions and methods, arrays using an appropriate programming language or visual programming language.			
Objective	**This course aims to enable students to:** • Learn about computer programming logic and develop a program logic using flowcharts, pseudo code and algorithm. • learn concepts applicable to all programming languages, including: identifiers, data types, arrays, control structures, looping • understand the main concept of Object Oriented Programming. • develop programs using any appropriate language			
Outcomes	• Use programming terminology correctly in discussion of course topics • Identify the need for a variable and select the appropriate primitive data representation • Distinguish between a reference to an array and a reference to an array element • Write simple mathematical formulae in pseudocode and flowcharts • Write Boolean expressions to control the flow of a program in pseudocode and flowcharts • Write programs that use internal documentation and standard white space conventions to communicate program design • Create flowcharts and write syntactically correct pseudocode to solve small programming problems using structured programming techniques • Use a variety of desk-checking or debugging techniques on programs written with structured programming techniques • Design elementary computer algorithms. • Develop small programs that implement basic algorithmic designs			
Year 1 **Term 2**	**Course Name :**	**Programming 1 lab**		
	Type :	**specialization**		
	Course ID	**GTEC 1104**	**Hours**	**1**

Disc	To introduce students to programming concepts and techniques using the Java language in a way appropriate for students without a programming background.
Objective	**This course aims to enable the students:** • Implement simple applications of object-oriented programming using java language. • To develop more complex programs of object-oriented language. • To develop the basic syntax and semantics of the Java language and programming environment • To develop the concepts of classes and objects • To develop the primitive data types built into the Java language and the difference between variables of primitive types and variables of class types • To develop features of a strongly typed language: variable declaration and type compatibility checking • To be able to implement decisions using if statements • To be able to program loops with while, for and do statements • To be able to write simple graphics programs involving the drawing of basic shapes • To develop the basics needed for testing and debugging programs To be able to use arrays and array lists and to learn about simple array algorithms
Outcomes	**Upon completion of course student should be able to:** • Upon successful completion of this course, students should be able to: • Analyze and explain the behavior of programs involving the fundamental program constructs • Write short programs that use the fundamental program constructs, including standard conditional and iterative control structures • Write short programs that use arrays or array lists • Design and implement a class based on attributes and behaviors of objects • Construct objects using a class and activate methods on them • Use static and instance members of a class properly • Write javadoc comments for classes and methods

Year 1	Course Name :	Digital Logic Design		
Term 2	Type :	specialization		
	Course ID	GTEC 1306	Hours	3
Disc	This course cover information representation. number systems, operations and codes. logic gates. Boolean algebra. Function of Combinational logic such as, decoders, encoder, multiplexers, flip flop, timers, counter. that will give student to understand and make some circuit in computers.			
Objective	• To Perform arithmetic operations in many number systems. • To Simplify the Boolean expressions. • To Analyze and design various combinational logic circuits. • To Understand the basic functions of Combinational logic.			
Outcomes	Upon completion of this course the student should be able to: • Understand the Digital Systems basic concepts . • Understand the computer logic qualify the student to understand the logic of programming.			

Year 1	Course Name :	Principles of Drawing		
Term 2	Type :	specialization		
	Course ID	TMUL 1302	Hours	3
Disc	This is a course in the theory and practice of drawing using a systematic variety of media and subject matter. The student will examine drawing through the graphic elements of line, plane, tone, shape, form, volume, rendering, and perspective. The course includes an introduction to light and shadow. Beginning problems will be structured to guide the student and the instructor will assist in this experience through individual attention. Instruction leads to direct the student and encourage subjective self-expression			
Objective	• Training on the free drawing techniques • stress ratios and proportionality. • identify the technical components of the work of art. • identify the visual perception of the technical elements and methods of optical illusion. • Emphasis on linear Studies □ • identify the different ways the display and manual drawing, which serves specialty graphic design and multimedia. • emphasis on the third dimension (Perspective) within the different structural compositions and eye level. • understand the nature of the surface of the raw material, texture and direction. • drawing cartoon characters • Upon successful completion of this course, students should be able to identify the strengths and weaknesses of drawings • be able to distinguish and utilize a variety of art materials			
Outcomes	• specialized knowledge in the field of visual perception, visual and means of free drawing deception.. • applied a number of projects and graphics. • Identify a variety of drawing media. • Define a variety of approaches to drawing such as contour, gesture and an understanding of plane geometry and logical form. • Describe a greater understanding of visualization through coordination of the drawing hand,			

		the eye and brain.

- Illustrate more of a concern with the verb drawing than the noun drawing (how to draw rather than how to make a drawing).

- Demonstrate understanding and manipulate the basic principles of one, and two-point perspective drawing, light and shadow, overlapping planes and line variation.

- Express a sense of whether they have an interest in and the potential to pursue further studies in the Fine Arts, Commercial Arts or Design.

Year 2	Course Name :	Educational Research Methods and Applied Statistics		
Term 1	Type :	College		
	Course ID	TECH 2205	Hours	2
Disc	This course will provide an opportunity for students to establish or advance their understanding of research through critical exploration of research language, ethics, and approaches. The course introduces the language of research, contents of research papers, ethical principles and challenges, and the elements of the research process within quantitative, qualitative, and mixed methods approaches. Students will use these theoretical underpinnings to begin to critically review literature relevant to their field or interests and determine how research findings are useful in forming their understanding of their work. This course has a lab of applied statistics to do research questionnaire and conduct research results.			
Objective	The goals is to enable the students to: 1. Understand research terminology. 2. Understand the process of conducting a scientific research. 3. Demonstrate the skills of conducting a literature review 4. Recognize the advantages of various quantitative and qualitative research methods. 5. Recognize ethical issues that arise in conducting research. 6. Develop a reasonable research proposal			
Outcomes	Student should be able understand the research types and its process. Student should be able to write a research proposal for the graduate research.			
Year 2	Course Name :	Database Management		
Term 1	Type :	Specialization		
	Course ID	GTEC 2301	Hours	3
Disc	This course introduces the fundamentals of the database management systems. The entity-relationship model. Relational, network, and hierarchical models. Relational algebra and relational calculus. Relational query languages (QUEL, SQL). Database System physical data organization. Design theory for relational databases. Concurrency control.			
Objective	**The goals are:** - To provide students a clear and complete description about the characteristics of Database systems. - To understanding data modeling and database design. - To understand the languages and facilities provided by database systems. - To understand the implementation of database systems.			

Outcomes	A- Knowledge and Understanding:
	• Be able to understand the principles and techniques of a number of research areas such as databases, DSS, information management, project engagement, data mining.
	• Be able to design a database as free-standing applications.
	• Be able to invoke the database applications with the World-Wide Web browser.
	B- Intellectual:
	• Be able to contribute in design and implement software systems in the field of decision making and strategic planning.
	• Be able to design a database as free-standing applications.
	• Be able to invoke the database applications with the World-Wide Web browser.
	C- Practical:
	• Be able to design a database as free-standing applications.
	• Be able to invoke the database applications with the World-Wide Web browser

Year 2	Course Name :	Database Management Lab		
Term 1	Type :	Specialization		
	Course ID	GTEC 2103	Hours	1

Disc	This course implements the fundamentals of the database management systems. Apply structural query language SQL to create tables and apply the relations between them. In addition, students should use Oracle 10g to develop projects with Graphical User Interface and setup applications.
Objective	**This course aims to:** • Enable the students create simple database and apply SQL using MySQL program. • To implement database systems. To develop a complete project using Oracle applying DBMS principles.
Outcomes	**After completion of this course the students will:** • Be able to design a database as free-standing applications. Develop a complete project within a team.

Year 2	Course Name :	Data communication and computer Networks		
Term 1	Type :	Specialization		
	Course ID	GTEC 2305	Hours	3

Disc	The course will present data communications fundamentals and computer networking methods. Design and Evaluation of computer networks using current trends in hardware and software. Data communication basic concepts , layered network models is studied.
Objective	1. Introduce fundamentals of data and computer communications. 2. Provide the student with a conceptual foundation for the study of data communications using the open system interconnection (OSI) layered architecture model. 3. Understand the Internet protocol.

Outcomes	- Ability to analyses and Design the networks; - An ability to determine the protocol; - An ability to create Subnating for networks.		
Year 2 **Term 1**	**Course Name :**	**Data communication and computer Networks Lab**	
	Type :	**Specialization**	
	Course ID	**GTEC 2107**	**Hours**	**1**
Disc	This course emphasizes aspects of networking, Subnetting (VLSM) IP addressing and routing in implementing scalable and highly performance Cisco routers that are connected to LANs, WANs, IPv4 and IPv6.The headlines in the application of the course on the program Packet Tracer .		
Objective	• Planning subnetting a medium-sized LAN with multiple switches, supporting VLANs, trunking, and spanning tree; • Troubleshooting IP connectivity (IPv4 and IPv6). -Static Routing • Configuring and troubleshooting RIPv1, RIPv2, EIGRP and OSPF (IPv4 and IPv6); - Dynamic Routing. • Configuring devices for SNMP, Syslog, and NetFlow access.		
Outcomes	• Create Subnetting IP address for network • Implementing Cisco IP Routing; • Implementing Cisco IP Switched Networks. • Analyses and Design the network.		
Year 2 **Term 1**	**Course Name :**	**Programming II**	
	Type :	**Specialization**	
	Course ID	**GTEC 2309**	**Hours**	**3**
Disc	A continuation of the course Programming I .This course introduces the object-oriented programming concepts, principles, and techniques, including classes, objects, inheritance, and polymorphism. All these concepts are illustrated via a contemporary object-oriented programming language.		
Objective	**The main objectives are to enable students to:** • Understand the object-oriented programming principles and techniques. • Understand classes and the relation between them. • Use an object-oriented Programming language to develop rather complex programs.		
Outcomes	• Describe the principles of object-oriented programming • Apply the concepts of data encapsulation, inheritance, and polymorphism to large-scale software • Acquire the concepts of Graphical User Interfaces • Develop object-oriented computer programs • Develop programs with Graphical User Interfaces capabilities		

	• Formulate problems as steps so as to be solved systematically • Develop software with team-work in mind			
Year 2 **Term 1**	**Course Name :**	**Programming II Lab**		
	Type :	**Specialization**		
	Course ID	**GTEC 2111**	**Hours**	**1**
Disc	A continuation of the course Programming I .This course introduces the implementation of the object-oriented programming concepts, principles, and techniques which encompasses classes, objects, inheritance, and polymorphism. All these concepts are illustrated via Java Programming language.			
Objective	**This course aims to enable the students:** • Implement simple applications of object-oriented programming using java language. To develop more complex programs of object-oriented language.			
Outcomes	**Upon completion of course student should be able to:** • Practice the principles of object-oriented programming • Apply the concepts of data encapsulation, inheritance, and polymorphism to large-scale software • Acquire the concepts of Graphical User Interfaces • Design and develop object-oriented computer programs • Design and develop programs with Graphical User Interfaces capabilities • Formulate problems as steps so as to be solved systematically Develop software with team-work in mind			
Year 2 **Term 2**	**Course Name**	**Ethics For IT**		
	Type :	**College**		
	Course ID	**TECH 2106**	**Hours**	**1**
Disc	This course concerns with the ethical dilemmas that exist where human beings, information objects, and social computing technologies interact. The course will stress ethical decision-making as well as legal and social responsibility in connection with technology-related concerns. Issues such as security, crime, privacy and intellectual property will be examined in the context of computer use.			
Objective	**The main goals are to:** • give a fuller, richer, deeper understanding of the social impact of computers and the ethical issues in human activities affected by computers. • prepare the student for living in a computerized world and perhaps working as a professional in the computing field. • improve students' presentation, debating and writing skills			
Outcomes	After successful completion of this course: • Students will understand many of the key ethical, legal and social issues related to information technology and how to interpret and comply with ethical principles, laws, regulations and institutional policies. • Students will understand the essential issues related to information security, how to take precautions and use techniques and tools to defend against computer crimes.			

Year 2	Course Name	Data Structures & Algorithms Analysis		
Term 2	Type :	Specialization		
	Course ID	GTEC 2308	Hours	3
Disc	This course covers the basics of algorithms, focusing on the themes of efficient algorithms. The course emphasizes the following topics: algorithm analysis , data structures, abstract data types, recursive methods, sorting and searching, and problem-solving strategies.			
Objective	**The goals of this course are to enable the students to:** • Understand algorithms and data structures and associated design and analysis techniques. • pay attention on the design of the program structure that is correct, efficient in both time and space utilization. • Practice various data structures. • Understand problem solving strategies.			
Outcomes	After successful completion of this course, students will be able to: • Present the concepts of stacks, queues, abstract data types, pointer, recursion, list and tree. • Understand Sorting. • Write programs which apply these concepts. • analyze the efficiency of various techniques • work in team on a project in the lab			
Year 2	Course Name	Data Structures & Algorithms Analysis LAB		
Term 2	Type :	Specialization		
	Course ID	GTEC 2110	Hours	1
Disc	This course is to apply and implement the main data structure techniques using java language. Topics includes arrays, stacks, queues, recursion, linked lists, trees, searching and sorting.			
Objective	**This course aims to enable the students:** • To implement practical applications of object-oriented programming using java language. • To implement arrays and linked lists and perform the basic operations (inserting, deleting, sorting, rearranging, and modifying) • To implement applications using stacks and queues. To develop more complex programs using trees.			
Outcomes	**Upon completion of course student should be able to:** • Practice the principles different data structures. • Apply the concepts of data structures in simple projects. • Design and develop object-oriented computer programs using trees. • Implements the ideas of searching and sorting in deferent data structures. Develop software with team-work in mind			
Year 2	Course Name	Systems Analysis & Design		
Term 2	Type :	Specialization		
	Course ID	GTEC 2312	Hours	3
Disc	This course covers the main concepts about analysis and design of information systems. Systems analysis includes the documentation of the system using such tools as dataflow diagrams and use cases. It focuses on gathering user needs and analyzing them then translate			

	those needs into diagrams using Unified Modeling Language (UML) diagrams. The systems development life cycle is a vital tool, and object-oriented technologies are introduced and integrated throughout the course.		
Objective	**The goals of this course are to enable the students to:** • Prepare and use various information gathering techniques of eliciting user information requirements and system expectations. • interpret user needs into diagrams using UML diagrams. • Understand different methodologies for system development and learn how to choose one of them for implementation. • improve their writing skills via documenting user needs and modeling it. • Communicate effectively, in both written and oral forms by documenting systems specifications and presenting them and to be persuasive in this presentation.		
Outcomes	**Knowledge: -**the student will gain an understanding of the following as they apply to computer information systems: •The historical and theoretical foundations and concepts of System Development techniques. •Comprehend the fundamentals of three development methodologies •Concepts and theory gained through the textbook by solving simulated system development tasks and projects. •Develop an integrated perspective of the complex human and technical interactions in the system development process as well as the approaches, tactics, and tools. •Gain a deeper understanding and appreciation for the complexities, organizational requirements, and approaches necessary for success in all aspects of the development of information systems projects. Skills: the student will demonstrate proficiency in the use of the following as they relate to computer information systems: •An understanding of all the steps of the System Development Life Cycle and the procedures, skills, and tools that comprise them. •Presentation skills through the demonstration of outcomes of system development projects. •Common tools and techniques used in professional system development and design		
Year 2 Term 2	**Course Name**	**Digital Media**	
	Type :	**Specialization**	
	Course ID	**TMUL 2304**	**Hours**	**3**
Disc	This course covers basic principles of each media type - text, graphics, audio, animation and video - describing their digitization and progressing onto issues that arise when media are combined. This		

	course has a lab which enables students to practice the proposed topics and apply projects on different media types.		
Objective	**The goals of this course are to enable the students to:** • Deal with photographic camera. • Understand the types of images and differentiate between them. • Understand the basics of audio and its formats. • Deal with video and create simple animations. • Practice project on different media types.		
Outcomes	1. Giving students the ability to deal with different kinds of photographic cameras. 2. Giving students the ability to identify the aesthetics of the image is a sound technician. 3. Give the student to produce photos press and websites. 4. Giving students the ability to make video 5. Giving students the ability to develop a simple animated film		
Year 2 **Term 2**	**Course Name**	Information Retrieval	
	Type :	College Elective 2	
	Course ID	TECH 2304B	**Hours**	**3**
Disc	This course introduces the basic techniques for text-based information systems: efficient text indexing; Boolean and vector space retrieval models; evaluation and interface issues; Web search including crawling, link-based algorithms, and Web metadata; text/Web clustering, classification; text mining. This course has a lab where the student will apply the studied techniques and do a project.		
Objective	The main objective of this course is to provide the most fundamental knowledge about the Information Retrieval and its techniques.		
Outcomes	Upon completion of the course, the student will be able to: • Understand the principles of information storage and retrieval systems and database • Understand how effective information search and retrieval is interrelated with the organization and description information to be retrieved • Use a set of tools and procedures for organizing information • Become familiar with the techniques involved in conducting effective searches of print and online information resources		
Year 3 **Term 1**	**Course Name**	**Software Engineering**	
	Type :	**Specialization**	
	Course ID	**GTEC 3313**	**Hours**	**3**
Disc	This course introduces the main principles of software engineering And software methodologies, requirements and modeling. It includes software Quality, system analysis and requirements; data collection, analysis, organization and documentation; feasibility and testing, maintenance and security issues.		
Objective	- Developing an in-depth understanding of software engineering concepts, processes, methods, techniques, and tools - Understanding software processes, process models (prescriptive and agile) - Mastering software engineering practice		

Outcomes	Upon successful completion of this course, the student will be able to:
	- Appreciate the need for software engineering and the role it plays in information systems development and maintenance - Understand and use various prescriptive software process models - Understand and use Agile methodologies and show their differences from prescriptive methodologies - Conduct and manage software projects using appropriate software engineering practice - List and describe new and hot research topics in the field of software engineering

Year 3	Course Name	Montage and Directing		
Term 1	Type :	Specialization		
	Course ID	TMUL 3303	Hours	3
Disc	This course designed to familiarize students with the many concepts and aesthetic principles necessary in Montage and directing various television programs and short films involving people (actors and characters).			
Objective	• familiarize students with the many concepts and aesthetic principles necessary in producing and directing • expand their knowledge of the methods of directing actors • encouraged to think visually and creatively			
Outcomes	• deepen aesthetic understanding and appreciation of actors' performance in fiction films and television programs • Research, analyze and visualize a character from page to screen • Create and produce a short movie that involves actors			

Year 3	Course Name	Web Programming		
Term 1				
	Type :	Specialization		
	Course ID	TMIS 3305	Hours	3
Disc	This course covers the most current tools available for developing Hyper Text Markup Language (HTML) documents and posting pages on the World Wide Web. Students will learn the semantics of a web page and how to abstract information in a universal form on the web with HTML5. They will learn how to make things "pretty" and presentable using CSS3. And interactivity and user-personalization will be added using JavaScript and an appropriate web programming language			

	(PHP or ASP). This course requires the student to build at least one major website design that interacts with a database.	

Objective	**This course aims to enable the students to:**
	- Learn essential skills for creating a website. - Understand how to build layouts that use properly formed HTML and CSS. - Create dynamic web sites that include client-side and server-side scripting. - Connect the website with a database using an appropriate web programming language.
Outcomes	After completion of this course the students will be able to: 1. design and programming Web sites 2. build Web sites dynamic effectively 3. Build site using various applications such as Google Site 4. Learn how to build Blog 5. Learn how publishing and editing news and announcements and add various topics about media

Year 3	**Course Name**	**Computer Graphics**		
Term 1	**Type :**	**Specialization**		
	Course ID	**TMUL 3305**	**Hours**	**3**
Disc	This Course aims to explain the necessary background and principles of computer graphics combined with direct applications in concrete and simple examples. Coupling the theory with the practical examples enables the student to apply the technical concepts directly and to visually understand what they mean.			
Objective	The main objective of this course is to introduce to the students the concepts of computer graphics. It starts with an overview of interactive computer graphics, two dimensional system and mapping, then it presents the most important drawing algorithm, two-dimensional transformation; Clipping, filling and an introduction to 3-D graphics.			
Outcomes	- Have a knowledge and understanding of the structure of an interactive computer graphics system, and the separation of system components. - Have a knowledge and understanding of geometrical transformations and 3D viewing. - Have a knowledge and understanding of techniques for representing 3D geometrical objects. - Have a knowledge and understanding of interaction techniques. - Perform simple 2D graphics with lines, curves and can implement algorithms to rasterizing simple shapes, fill and clip polygons and have a basic grasp of anti-aliasing techniques. - Use C++ functions or equivalent graphics tools (Java, Pascal) to perform items in the course. - Be able to create interactive graphics applications			

Year 3	**Course Name**	**Operating Systems**
	Type :	specialization

Term 2	Course ID	GTEC 3314		Hours	3
Disc	This course addresses the history of operating systems, the important role of operating systems in the computer. Scheduled functions and components of operating systems such as memory management, organization, CPU control. Algorithms of Scheduling and managing operating systems components. It provides a brief discussion about mobile devices and operating advantages for personal computer operating systems. The practical part of the course is interested in studying the Linux operating system as an environment to run and work platform for personal computers and large servers.				
Objective	- To provide a basic, but essential, course on computer operating systems to junior CS and senior MIS undergraduate students. - To provide discussions of fundamental O/S concepts that are applicable to a variety of popular systems like Microsoft Windows, Unix, MacOS, DOS, and others. - To apply theories and concepts discussed in class through group projects. - Define, explain, and apply introductory operating systems concepts: process management, inter-process communication, memory management, I/O systems, file systems, and the like - Use the UNIX operating system interface to implement a user-level shell in the C language - Design and implement a correct concurrent program requiring synchronization - Gain experience in implementing and debugging operating system components, including the kernel module, system call, synchronization primitives, and the file system				
Outcomes	You will have an opportunity to learn a lot of practical information about how programming languages, operating systems, and architectures interact and how to use each effectively. This course is the first time you will learn about how concurrency and distributed systems communicate and work correctly. This knowledge will help you to more effectively use and manipulate computers and computer programs. I have designed the written and programming assignments to build on and enhance the lectures. You will hear the concepts in lecture, read them in the book, analyze them in the written homework, and put them in practice in the programming assignments.				
Year 3	Course Name	**Operating Systems Lab**			
Term 2	Type :	**specialization**			
	Course ID	GTEC 3116		**Hours**	1
Disc	This course is designed to equip students, who have a particular interest in becoming practitioners, with a substantial hands-on experience in solving concrete problems in a computer operating system, via programming, in a laboratory intensive course. Students experiment with many topics in the areas of operating systems and network protocols, including but not limited to: boot loaders, shell, process scheduler, file system, virtual memory, network protocols and packet filtering and manipulation, and device drivers.				

Objective	• To develop conceptual understanding of UNIX commands and UNIX Shell programming. • To provide a practical exposure of all algorithms and behavior of processes in the system withrespect to all its timings. • To develop understanding about signal, inter-process communication and semaphore.		
Outcomes	• Apply appropriate instruments and/or software tools and handle them carefully and safely to makemeasurements of physical quantities or perform data analysis. • Identify the strength and limitations of theoretical models and establish a relationship betweenmeasured data and underlying physical principles. • Specify appropriate equipment and procedures/algorithms, implement these procedures/algorithms,analyze and interpret the resulting data. • Design and build a software/hardware part to meet desired specifications and tests it using appropriate testing strategy and/or equipment.		
Year 3 Term 2	Course Name	**IT Security and risk management**	
	Type :	**specialization**	
	Course ID	GTEC 3318	Hours	3
Disc	This course is to make students familiar with the basic concepts of risk management information systems security ISSRM. Explore the latest techniques for securing information and its systems, from policies and procedures to technologies and audit. Also it provides students with different techniques for security risk management. Ability to perform full activities security risk.		
Objective	• Analyze internal and external threats to proactively prevent information attacks. • Learn how to do security risk management and designed secure system. • Deal with methods impacts the performance of any information system. • Learn how to define the security problems. • Study a wide spectrum of different issues where we can protect our information systems. • Deal with tools of risk and perform risk management strategies.		
Outcomes	Upon successful completion of this course, students will be able to: • Understand the basic concepts of the risk information security; • Understand a variety of generic security threats and vulnerabilities, and identify and analyze particular security problems for a given application. • Understand risk management tools and methods.		
Year 3 Term 2	**Course Name**	Image Processing	
	Type :	**specialization**	
	Course ID	TMUL 3306	Hours	3
Disc	The following quote from the introduction of the adopted textbook gives a nice introduction of image processing, its techniques and applications: Image processing is a general term for the wide range of techniques that exist for manipulating and modifying images in various ways. photographers and physicists can perform certain image processing operations using chemicals or optical equipment; in this book, however, we concern ourselves solely with digital images		

	processing, i.e., that which is performed on digital images using computers. we will consider not only how digital images may be manipulated and enhanced, but also how they may be acquired, stored and represented in computer memory. page 4 Digital image processing is not a new phenomenon; techniques for the manipulation, correction and enhancement of digital images have been in practical use for over thirty years --an early application being the removal of defects from images obtained by NASA's unmanned lunar probes-- and the underlying theoretical ideas have been around for a lot longer. we don't have to look very far these days to see an example of image processing at work. it has insinuated itself into many different areas of human endeavor, ranging from small-scale activities such as desktop publishing and healthcare, through to activity on the large scale imaginable: the search for natural resources on Earth, or the study of other planets, starts and galaxies in our universe.
Objective	1. Identify the image ,all the types and characteristics of the image 2. Learn about different methods of digital image processing 3. Learn mechanisms for the production of digital images 4. Use different programs to improve the image 5. Learn all types of images 6. Learn mechanism to increase the resolution of images 7. Learn different methods to remove the noise on images 8. learn different methods to improve image 9. Use of different techniques for image processing 10. Use different techniques to segment images 11. The mechanism of image compression 12. Learn the different extensions for images 13. Use edge detection technique
Outcomes	After completion of this course the students will be able to: 1. improve image 2. remove the image noise 3. use image processing techniques

Year 3	**Course Name**	Image Processing Lab		
Term 2	**Type :**	**specialization**		
	Course ID	**TMUL 3108**	**Hours**	**1**
Disc	The purpose of this lab course is to know and understand the design and methodologies for digital image processing.			
Objective	• To implement the fundamental concepts of digital image processing. • To provide students an exposure to a broad range of image processing techniques and formats: i.e. exposureto digital image formats, and a working familiarity with digital image manipulations (filtering, denoising,restoration). • To implement image image enhancement, reconstruction, compression and segmentationtechniques for a digital image. • To expose students to current technologies and issues that are specific to image processing systems • To design image processing systems			
Outcomes	**The students should be able to use the MATLAB-image processing tool box to:** • Implement the basic representation of a digital image and basic relationship between thepixels. • Demonstrate basic image transforms for a digital image. • Apply the various image enhancement techniques. • Demonstrate the image restoration techniques.			
Year 3	**Course Name**	**Artificial Intelligent**		

Term 2	Type :	specialization		
	Course ID	TMUL 3310	Hours	3
Disc	This course on Artificial Intelligence (AI) covers the breadth of the field of AI, including topics such as Agents, searching, problem-solving, logic, knowledge representation, reasoning, learning, perception and prolog language.			
Objective	1. Introducing the basic concepts and techniques of Artificial Intelligence 2. Developing skills of using Artificial Intelligence algorithms for solving practical problems 3. Understanding of both the achievements of AI and the theory underlying those achievements 4. A basic proficiency in a traditional AI language including an ability to write simple to intermediate programs and an ability to understand code written in that language 5. A basic understanding of some of the more advanced topics of AI such as learning , natural language processing, agents and robotics, expert systems, and planning			
Outcomes	After successful completion of the course, students should 1. know classical examples of artificial intelligence 2. know characteristics of programs that can be considered "intelligent" 3. understand the use of heuristics in search problems and games 4. know a variety of ways to represent and retrieve knowledge and information 5. know the fundamentals of artificial intelligence programming techniques in a modern programming language 6. consider ideas and issues associated with social technical, and ethical uses of machines that involve artificial intelligence			
Year 4 Term 1	Course Name	Human Computer Interactive		
	Type :	specialization		
	Course ID	TMUL 4315	Hours	3
Disc	Human–computer interaction (HCI) is the study of interaction between people (users) and computers. It is often regarded as the intersection of computer science, behavioral sciences, design and several other fields of study. Interaction between users and computers occurs at the user interface (or simply interface), which includes both software and hardware, for example, general-purpose computer peripherals and large-scale mechanical systems, such as aircraft and power plants.			
Objective	The main objective is to get student to think constructively and analytically about how to design and evaluate interactive technologies. Basically, the course will introduce them to key areas, theoretical frameworks, approaches and major developments in HCI.			

Outcomes	After studying the course students will be able to:
	• Explain why it is important to design interactive products that are usable
	• Gather data in the context of developing a simple interactive product using suitable techniques
	• Communicate effectively to peers and specialists about requirements, design, and evaluation activities relating to interactive products
	• Define a suitable program of user involvement that treats users ethically and fairly.

Year 4	Course Name	Data Visualization		
Term 1	Type :	specialization		
	Course ID	TMUL 4319	Hours	3
Disc	This course will cover basic topics of data visualization techniques for multiple data types, manipulation data to describe it in more meaningful ways, and cover data processing techniques.			
Objective	• To understand the techniques for multiple data types. • To explain the data processing . • To discuss the software-based visualization, hardware-based visualization			
Outcomes	Upon successful completion of this course, students will be able to: • Able to understand the different types of data visualization; • Able to understand data processing of data; • Able to understand software-based visualization, hardware-based visualization.			

Year 4	Course Name	Mobile Programming		
Term 1	Type :	specialization		
	Course ID	TMUL 4309	Hours	3
Disc	This course will introduce students to mobile computing and mobile application development. Mobile computing will be discussed from three perspectives: mobile technology, application development, and user interaction. The course will overview various mobile computing applications, technologies and wireless communication. Next, students will use mobile application frameworks and development environments to reinforce concepts covered in lectures. User interface and user experience will be discussed. Students will be expected to learn at least one mobile application development framework and use it to implement their assignments and course project.			
Objective	This course aims to : • Introduce the students to mobile environments. • Enable students to understand basic concepts of mobile technology Enable students understand and describe technical terminologies which are frequently used in the mobile technology and mobile systems.			
Outcomes	Upon completion of the course, the student will be able to: • Describe the basic concepts and principles in mobile computing • 2 Understand the concept of Wireless LANs, PAN, Mobile Networks, and Sensor Networks • 6 Design and implement mobile applications to realize location-aware computing			

Year 4	Course Name	Computer Animation		
Term 1	Type :	specialization		
	Course ID	TMUL 4311	Hours	3
Disc	This course gives students experience with 3D computer graphics and 3D animation techniques using Maya software. Students will explore the use of Maya software to create 3D computer images and animation for interactive multimedia, motion graphics, computer games and Web. The students will learn techniques and strategies for creating 3D computer models, and creating 3D animations that illustrate a concept or tell a story. These techniques include 3D modeling, rigging, texturing, animation, rendering. Students will develop projects that demonstrate both creativity and an introductory knowledge of 3D computer graphics.			
Objective	- Introduce the theories and concepts of 3D animation. - Learn techniques as 3D modeling, rigging, texturing, morphing, animation, rendering. - Create 3D computer images (3D Characters) and animation for motion graphics. Creating 3D animations that illustrate a concept or tell a short story.			
Outcomes	Model a character using Maya software. Add some facial details to the model. lay out UV maps and create textures and surface shaders. Creating facial expressions. Building a skeleton that will create the overall body deformations necessary to animate a character. Adding controls to a character. Have a simple overview for animating the character.			
Year 4	Course Name	Computer Animation LAB		
Term 1	Type :	specialization		
	Course ID	TMUL 4113	Hours	1
Disc	Lab Experiments based upon: Lines, pixel graphics, shapes, polygons, arcs, 2D/3D translation, rotation and texturing, Animation.			
Objective	- To make students learn graphical implementation in Java 2D/3D. - Providing basic knowledge on creating shapes, polygons and texturing. - Intends to equip students with 2D/3D graphical world representations			
Outcomes	- On completion of the lab, the student will be able design 2D geometrical objects. - The students will be able to create 3D shapes and provide texturing, rotation etc to them. - The students will be able to implement basic animation on java platform.			
Year 4	Course Name	Advanced Database		
Term 1	Type :	specialization Elective Course 1		
	Course ID	GTEC 4315	Hours	3
Disc	The primary focus of this course is on Data Warehousing and its applications to business intelligence. The concentration will be on topics like: requirements gathering for data warehousing, data warehouse architecture, dimensional model design for data warehousing, physical database design for data warehousing, extracting, transforming, and loading strategies, introduction to business intelligence, design and development of business intelligence applications, expansion and support of a data warehouse.			
Objective	Enriching the students with knowledge and building their practical skills of Data Warehouse and Business Intelligence topics The course aims:			

	• to teach the students the data warehouse concepts • to teach the students the differences between OLTP and OLAP • to teach the students how to analyze, design, and implement data warehouse projects • to teach the students how to link data warehouse repositories to business intelligence applications for generating statistical reports that help in supporting the decisions of the top managements			
Outcomes	Upon successful completion of this course, the student will be able to: ▪ Gather requirements for data warehousing ▪ Explain data warehouse architecture ▪ Design a dimensional model for data warehousing ▪ Design a physical model for data warehousing ▪ Comprehend extract, transform and load strategies ▪ Identify Online Analytical Processing (OLAP) databases ▪ Design and develop business intelligence applications ▪ Expand and support a data warehouse			
Year 4	**Course Name**	**Advanced Programming**		
Term 2	**Type :**	**specialization Elective Course 2**		
	Course ID	**GTEC 4320**	**Hours**	**3**
Disc	The purpose of the course is to study concepts and techniques necessary to write high-quality programs, including advanced concepts of object-oriented programming, modular design. Some advanced topics such as reflection, distributed programming, multi-threading, Graphical User Interface (GUI), working with databases and sockets libraries are also covered. All of the mentioned concepts and techniques are studied using any language programming.			
Objective	• Examine advanced concepts programming and practice on reusing components. • Design object-oriented programming solutions that include concepts such as encapsulation, inheritance, polymorphism, and interface. • Understand advanced concepts of (GUI), • Multithreading, sockets and database manipulation.			
Outcomes	Upon successful completion of this course, students will be able to: • Design and implement software employing the principles of encapsulation, information hiding, abstraction, and polymorphism. • Design, implement, and use classes and methods in an object-oriented programming language, employing standard naming conventions and making appropriate use of advanced features such as inheritance, exception handling, and GUIs. • Recognize and use basic object-oriented design patterns to structure solutions to problems.			
Year 4	**Course Name**	**Virtual Reality**		
Term 2	**Type :**	**specialization**		
	Course ID	**TMUL 4320**	**Hours**	**3**
Disc	This course aims to understand the basic principles of virtual reality (VR); describe the historical development of virtual reality; Evaluate current virtual reality hardware and software; and Design			

	and construct a simple virtual environment. At the end of this course students should be able understand the VR concept and be able to manipulate with VR projects and types.	
Objective	- Understand how modern VR headsets "trick the brain" into believing it's somewhere else. - Understand what makes content experienced through modern virtual reality headsets a truly new type of media distinct from all previous media forms. - Explore, critique and deconstruct VR experiences being created in the Oculus Share developer portal. Be able to explain what resources and skills are required to create a similar experience would be created. - Identifying stories that can be "told" better through an experience, then building them. - Get experience creating stories for various types of communications, including entertainment, journalism, advertising and public relations. - Know the unique ethical and health considerations that must be taken into account for any virtual reality experience. Understand the legal ramifications to you as a VR producer if these are not taken into account.	
Outcomes	**You will learn basic skills in the following areas:** - Using the Unity3D gaming engine. - Using 3D modeling tools. - Conceptualizing and building your own 3D story. - Creating interactive game elements that pull a user through a story. - Using portable 3D scanners and incorporating the output into a story. - Producing 360 video - Incorporating 360-degree video into a story. - Exporting for the Web, Oculus Rift, Samsung GearVR and Google Cardboard. Exporting for 2D body responsive video walls.	

Year 4	Course Name	Interactive Multimedia Application Development		
Term 2	Type :	specialization		
	Course ID	TMUL 4314	Hours	3
Disc	This is a hands-on, project-based course. Students will learn the basics of multimedia data formats and algorithms, and build applications that work with multimedia data using non-standard interfaces such as game controllers and multi-touch surfaces. Emphasis is on using open-source libraries and affordable and easily available devices.			
Objective	This is a hands-on, project-based course. The objectives include: • Understand basic topics in multimedia • Understand software technologies of non-traditional interfaces			

		• Development of interactive multimedia applications
Outcomes		• understand basic concepts related to MM including data standards, algorithms and software
		• experience development of multimedia software by utilizing existing libraries and descriptions of algorithms
		• learn about cutting-edge multimedia topics through independent study and presentations in class

Year 4	**Course Name**	**Game Programming**		
Term 2	**Type :**	**specialization**		
	Course ID	**TMUL 4316**	**Hours**	**3**
Disc	Game development course is advanced course for multimedia students that describes the game development process from the idea to make design and programming ending to publish the game, we will discuss lectures to make the student in the track of game development using unity game engine which is in the first of best game engines, we will explain how to make games for pc, web and mobile and how to market it and making profit.			
Objective	• understanding of game development using game engines , from the scratch through the game development life cycle. • introduce JavaScript programming and it's usage for game development • publish your game as professional and finally • make profit from your games			
Outcomes	• Knowing about the game development production. • What are the game engines and why we use unity3d? • How to make 2d and 3d games from the scratch. • How to export your game to pc, web and mobile. • Make money from your games.			

Year 4	**Course Name**	**Game Programming LAB**		
Term 2	**Type :**	**specialization**		
	Course ID	**TMUL 4118**	**Hours**	**1**
Disc	Experiments based upon 2D/3D Game design concepts will be dealt with			
Objective	• To learn the fundamental concepts involved in 2D/3D game development techniques. • This course aims at providing students learn how to design and program 2D/3D games using Unity 3d game engine. • The course provides in depth and step by step process of game development using JavaScript programming language.			
Outcomes	• The student will have the capability of developing a 2D/3D game using JavaScript programming skills and Unity 2D/3D interface. • With successful completion of the course, students will be able to create first person and third person			

| | shooter game. |
| | • The students will be able to design and control characters and provide them artificial intelligence. |