



المملكة العربية السعودية  
المؤسسة العامة للتدريب التقني والمهني  
الإدارة العامة لتصميم وتطوير المناهج

## الكليات التقنية

**CURRICULUM**

**FOR**

**Department**

**Computer**

**Major**

**Programming**



**Program Description:**

This program of programming educates and trains students the fundamentals of computer science and mathematics, in order to analyze and solve computing problems, as demonstrated by their professional accomplishments in industry and government.

The Bachelor of programming in Computer Department is designed to give the students a strong background in computer science and other related courses.

Also it educates students with an understanding of real-world computing needs, as demonstrated by their ability to address technical issues involving computing problems that can encountered in industry, government and post-graduated programs.

Computer Programming train students to work effectively, professionally and ethically in computing-related professions, as demonstrated by their communications, teamwork and leadership skills in industry, government and post-graduated programs.



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Seventh Trimester								
	Course Code	Course Name	Prereq	No. of Units				
				CRH	L	P	T	CTH
1	ISL 305	Islamic Culture (3)		2	2	-	-	2
2	MAH 325	Mathematics (3)		4	4	-	2	6
3	PHY 325	Physics (2)		4	3	2	-	5
4	ENG 305	English (1)		2	2	-	2	4
5	PRG 345	Computer Programming		3	2	2	2	6
6	NET 345	Computer Networkes		3	2	2	2	6
<b>Total</b>				18	15	6	8	29
L = Lecture Hours, P = Workshop/Laboratory Hours, T = Tutorial Hours								

Eighth Trimester								
	Course Code	Course Name	Prereq	No. of Units				
				CRH	L	P	T	CTH
1	ARB 305	Arabic		2	2	-	-	2
2	MAH 326	Mathematics (4)		4	4	-	2	6
3	ENG 306	English (2)		2	2	-	2	4
4	PRG 377	Data Structure	PRG 345	3	2	2	2	6
5	NTS 346	Virtual Machine		3	2	2	-	4
6	ACC101	Financial Accounting -1		4	4	-	1	5
<b>Total</b>				18	16	4	7	27
L = Lecture Hours, P = Workshop/Laboratory Hours, T = Tutorial Hours								

Ninth Trimester								
	Course Code	Course Name	Prereq	No. of Units				
				CRH	L	P	T	CTH
1	ENG 307	English (3)		2	2	-	2	4
2	GMS 435	Introduction to Management & Leadership		2	2	-	2	4
3	GMS 436	Communication Skills		2	2	-	2	4
4	PRG 375	Web Technologies		3	2	2	-	4
5	PRG 378	Advance Computer Programming	PRG 377	3	2	2	-	4
6	PRG 379	Database Administration		3	2	2	-	4
<b>Total</b>				15	12	6	6	24
L = Lecture Hours, P= Workshop/Laboratory Hours, T = Tutorial Hours								



Tenth Trimester								
	Course Code	Course Name	Prereq	No. of Units				
				CRH	L	P	T	CTH
1	ENG 308	English (4)		2	2	-	2	4
2	GMS 437	Engineering Project Management		3	3	-	2	5
3	MAH 425	Statistic & Probability		4	4	-	2	6
4	PRG 476	Software Engineering	PRG 378	3	2	2	-	4
5	PRG 475	Selected Solutions in ERP System	PRG 375	2	-	4	-	4
6	PRG 495	Project (1)	PRG 377 & PRG 375	2	2	-	-	2
<b>Total</b>				16	13	6	6	25
L = Lecture Hours, P = Workshop/Laboratory Hours, T = Tutorial Hours								

Eleventh Trimester								
	Course Code	Course Name	Prereq	No. of Units				
				CRH	L	P	T	CTH
1	ENG 309	English (5)		2	2	-	2	4
2	GMS 438	Quality Tools & Applications		3	3	-	2	5
3	GMS 439	Engineering Economics		3	3	-	-	3
4	NET 466	Information & Network Security	NET 345	2	2	2	2	6
5	PRG 485	Selected Topics	PRG 476	2	-	4	-	4
6	PRG 496	Project (2)	PRG 495	2	-	4	-	4
<b>Total</b>				14	10	10	6	26
L = Lecture Hours, P = Workshop/Laboratory Hours, T = Tutorial Hours								

Twelfth Trimester								
	Course Code	Course Name	Prereq	No. of Units				
				CRH	L	P	T	CTH
1	PRG 499	Co-operative Training	Pass All Courses	4	420			
<b>Total</b>				85				
<b>The total training hours</b>								
L = Lecture Hours, p = Workshop/Laboratory Hours, T = Tutorial Hours								



## Brief description

### **PRG 345 Computer Programming:**

This course introduces fundamental structured and object-oriented programming concepts and techniques, using Java, and is intended for all who plan to use computer programming in their studies and careers. Topics covered include variables, arithmetic operators, control structures, arrays, functions, recursion, dynamic memory allocation, class usage and class writing. Program design and testing are also covered, in addition to more advanced object-oriented concepts including inheritance and exceptions as time permits.

### **NET 345 Computer Networks:**

This course provides a global review of the basic knowledge in computer network and its applications. It focuses on configuring, managing and troubleshooting elements of the basic network infrastructure. Trainees learn how to configure workstations, to operate and manage a basic network.

Trainees learn also about OSI and TCP/IP protocols by examining packet and protocol traces. Hands-on exercises include the use of a variety of standard model-based applications and protocols.

### **NTS 346 Virtual Systems:**

This course describes how to monitor and operate a private cloud with Microsoft System Center 2012. IT focuses on how to manage and administer the private cloud, and it describes how you can monitor key infrastructure elements and applications that run within the private cloud.

This course is intended for datacenter administrators who are responsible for monitoring and protecting the private cloud infrastructure. It is also intended for solution architects who are responsible for designing private cloud architectures and extending existing private cloud solutions. The primary audience for this course is administrators who create service requests. The secondary audience includes datacenter administrators—who are responsible for providing provisioning for applications including configuring and deploying those applications—application/service business owners, and administrators who implement service requests.

### **PRG 375 Web Technologies:**

This course is designed to offer an overview of the modern Web technologies used for the Web development. The purpose of this course is to give students the basic understanding of how things work in the Web world from the technology point of view as well as to give the basic overview of the different technologies that can be used to develop Web-based Applications.

### **PRG 378 Advance Computer Programming:**



This course introduces Advanced feature in server topics in programming. These include Implementing a New Class, Designing and Developing a Class, Inheritance, Building User Interfaces, Input/Output, Threads.

**PRG 379 Database Administration:**

This course prepares trainees to perform the day-to-day administration of a database system. The focus of this course is on Oracle database administration. Trainees will focus on the following: installing database management software and utilities, controlling access to data and resources, troubleshooting an Oracle database, the backup and recovery of Oracle databases, and resolving common performance problems.

**PRG 476 Software Engineering:**

This course is aimed at helping students build up an understanding of how to develop a software system from scratch by guiding them through the development process and giving them the fundamental principles of system development with object-oriented technology using UML. The course will initiate students to the different software process models, project management, software requirements engineering process, systems analysis and design as a problem-solving activity, key elements of analysis and design, and the place of the analysis and design phases within the system development life cycle.

**PRG 475 Selected Solutions in ERP System:**

The course provides an overview of Enterprise Resource Planning software systems and their role within an organization. It introduces key concepts integrated information systems and explains why such systems are valuable to businesses.

Lab materials explain how the fundamental business processes interact with SAP ERP in the functional areas such as Sales and Distribution, Production Planning, Financial Accounting, and Human Capital Management.

**NET 466 Information & Network Security:**

The course covers theory and practice of network and information security, focusing in particular on the security aspects of the network and web. It surveys cryptographic tools used to provide security.

The program validates advanced knowledge and skills required to engineer secure network infrastructures, web applications and data security. The curriculum emphasizes the real-world best practices of network security engineering utilizing Cisco IOS Software security features, Cisco ASA adaptive security appliance features, Cisco Intrusion Prevention Systems (IPSs), Cisco security management tools, and techniques to implement a secure Web server and application with PKI.

**ACC 101 Financial Accounting:**

This course is the first one of accounting courses which aimed at providing the trainee with the basic skills and knowledge of accounting systems, and preparing the journal entries and financial statements in accordance with the generally accepted accounting principles.

In this course, the training will be provided through theoretical information for five lectures weekly, and exercises for one lecture.



### Courses description

<b>Department</b>	General Study	<b>Major</b>	All Majors
<b>Course Name</b>	Arabic 2	<b>Course Code</b>	ARB 305
<b>Prerequisites</b>		<b>Credit Hours (L,W,T)</b>	2 (2,0,0)

#### Course description :

This course concentrates on improving the advance skills of arabic composition of technical colleges students according to their needs and knowledge. It enables them to acquire enough knowledge of types of writing in Arabic. It also gives the theoretical description and practical training of the basic types : summarizing, report, and administrative message,..etc. The course also intends to introduce dictative and grammatic subjects to solve the problems of writing and the common mistakes in composition with training on them to change them to acquired linguistic experiences.

#### Topics :

- Building elements of the text.
- Types of functional writing.
- Types of technical writing.
- Writing mistakes.

#### Textbook :

كتاب: " التحرير الكتابي" للمؤلفين : د. حمدان الزهراني، د. فهد اللهيبي، د. سعد المطرفي . دار النشر : دار حافظ بجدة





<b>Department</b>	General Study	<b>Major</b>	All Majors
<b>Course Name</b>	Islamic Culture 3	<b>Course Code</b>	ISL 305
<b>Prerequisites</b>		<b>Credit Hours (L,W,T)</b>	2 (2,0,0)

**Course description :**

This course covers principle areas of Islam and Contemporary Issues such as islam systems (the aims of Islam, profession in Islam , and human right ) considering to the determination of the general objectives of profession conception , the purposes, and the principles that islam brought, concentrating on what distinguishes islam in its organization with respect to its completeness, its detailing, and its linking between the purposes of sharia and what it brought as a social and economic system

**Topics :**

- Introduction to assets approach Sunnis.
- profession in Islam.
- Human Right in Islam.
- Suspicious cases in Human Right and response.

**Textbook :**

المدخل الى الثقافة الإسلامية – جامعة الملك سعود



<b>Department</b>	General Study	<b>Major</b>	All Majors
<b>Course Name</b>	Advance Computer Applications	<b>Course Code</b>	CMT 385
<b>Prerequisites</b>		<b>Credit Hours (L,W,T)</b>	2 (0,4,0)

**Course description :**

This course designed to give the student an advance skill of the Microsoft Word, Microsoft Excel and Microsoft Project. The student has to know how to use the advance option and create a professional document.

**Topics :**

- Microsoft Word : Use advance option and inset it inside the document
- Microsoft Excel : Use the high level option with workbooks
- Microsoft Project : Give a brief knowledge about how the student use the Microsoft Project

**Experiments:** if applicable it will support the theoretical topics.

**References :**

- Microsoft MOS



<b>Detailed of practicals Contents</b>			
<b>Week No</b>	<b>Contents</b>	<b>material</b>	<b>Hours</b>
<b>1</b>	Create new documents apply templates	Microsoft Word	<b>4</b>
<b>2</b>	Inserting special characters (©, ™, £) Configure AutoCorrect Options Inserting Special Characters Using AutoCorrect Disabling AutoCorrect		<b>4</b>
<b>3</b>	Record simple macros Assign shortcut keys Manage macro security		<b>4</b>
<b>4</b>	Create new workbooks using templates Select a Template from the New Tab Search for Additional Templates	Microsoft Excel	<b>4</b>
<b>5</b>	Display dates and times with functions Summarize data with functions Use a financial function Use formulas to create subtotals Uncover formula errors		<b>4</b>
<b>6</b>	Demonstrate how to apply the SUM function Demonstrate how to apply the COUNT function Demonstrate how to apply the AVERAGE function Demonstrate how to apply the MIN and MAX functions		<b>4</b>
<b>7</b>	Import files Set data validation Create outlines Collapse groups of data in outlines Filter records Change the sort order Remove duplicates Manage macro security		<b>4</b>
<b>8</b>	Navigate in Microsoft Project Create a Project Schedule Define Project Calendars Enter Tasks and Task Details	Microsoft Project	<b>4</b>



	<p>Organize Tasks into Phases                  Link Tasks                  Document Tasks                  Review the Project Schedule's Duration</p>		
<b>9</b>	<p>Establish people resources                  Establish equipment resources                  Establish material resources                  Establish cost resources                  Establish resource pay rates                  Adjust resource working times                  Add resource notes</p>	<p>Microsoft Project</p>	<b>4</b>
<b>10</b>	<p>Assign work resources to tasks                  Add more work resource assignments to tasks                  Assign material resources to tasks                  Assign cost resources to tasks</p>		<b>4</b>
<b>11</b>	<p>Apply a task calendar to an individual task                  Change task types                  Split a task                  Establish recurring tasks                  Apply task constraints                  Review the project's critical path                  View resource allocations over time</p>		<b>4</b>



<b>Department</b>	General Study	<b>Major</b>	All Majors
<b>Course Name</b>	Computer Programming	<b>Course Code</b>	CMT 325
<b>Prerequisites</b>		<b>Credit Hours (L,W,T)</b>	3 (2,2,0)

**Course description :**

The main purpose of this course is to help the trainees increase their programming and problem solving skills.

This course should provide trainees with basic Knowledge of C++-Programming, regarding syntax and applied practice, with a focus on object-oriented design principles.

**Topics :**

- Problem-Solving and Introduction programs and C++.
- Elementary programming.
- Selections.
- Mathematical Functions, Characters, and Strings.
- Loops.
- Functions.
- Arrays.
- Objects and classes.

**Experiments:** if applicable it will support the theoretical topics.

**References :**

- Y. Daniel Liang, Introduction to Programming with C++, 3/E.
- Gary J. Bronson, C++ for Engineers and Scientists, 3/E.





<b>Detailed of Theoretical Contents</b>			
	<b>Contents</b>	<b>Week no.</b>	<b>Hours</b>
<b>1</b>	<b>Problem-Solving and Introduction programs and C++:</b> <ul style="list-style-type: none"> <li>- Algorithms and Flowchart.</li> <li>- Understand software development cycle.</li> <li>- Realize the fundamental of C ++.</li> </ul>	<b>1</b>	<b>2</b>
<b>2</b>	<b>Elementary programming :</b> <ul style="list-style-type: none"> <li>- Study basic data types, their declarations and initializations.</li> <li>- Characters, and Strings.</li> <li>- Use variables to store data.</li> </ul>	<b>2</b>	<b>4</b>
<b>3</b>	<b>Selections :</b> <ul style="list-style-type: none"> <li>- Implement selection control using if and switch statements</li> <li>- Combine conditions using logical operators</li> <li>- Write expressions using the conditional operator.</li> <li>- Format output using stream manipulators.</li> <li>- Examine the rules governing operator precedence and operator associativity .</li> </ul>	<b>1</b>	<b>2</b>
<b>4</b>	<b>Loops:</b> <ul style="list-style-type: none"> <li>- Write loops using do-while, while and for statements.</li> <li>- Control a loop with the user confirmation or a sentinel value.</li> <li>- Write nested loops.</li> <li>- Learn the techniques for minimizing numerical errors.</li> <li>- Implement program control with break and continue .</li> </ul>	<b>1</b>	<b>2</b>



5	<p><b>Function basics:</b></p> <ul style="list-style-type: none"> <li>- Mathematical Functions.</li> <li>- Define and invoke different types of functions.</li> <li>- Use function prototypes for function headers.</li> <li>- Know how to pass arguments.</li> <li>- Create header files for reusing functions.</li> <li>- Develop functions for various tasks</li> <li>- Develop applications using C++ functions .</li> </ul>	2	4
6	<p><b>Advanced function feature:</b></p> <ul style="list-style-type: none"> <li>- Experience advanced topics on pass-by-value, pass-by-reference.</li> <li>- Understand the difference between them.</li> <li>- Determine the scope of local and global variables.</li> <li>- Define functions with default arguments.</li> <li>- Improve runtime efficiency by using inline functions .</li> </ul>	1	2
7	<p><b>Arrays :</b></p> <ul style="list-style-type: none"> <li>- Understand the necessity of an array in programming.</li> <li>- Know how to declare and initialize an array.</li> <li>- Program common array operations.</li> <li>- Develop and invoke functions with array arguments.</li> <li>- Process string using C-strings .</li> </ul>	2	4
8	<p><b>Objects and classes:</b></p> <ul style="list-style-type: none"> <li>- Describe objects and classes.</li> <li>- Create objects using constructors.</li> <li>- Distinguish between instance and static variables and functions.</li> <li>- Access data fields and invoke functions using the object member access operator.</li> <li>- Declare private data fields for data field encapsulation</li> </ul>	2	4





	and make classes easy to maintain .		
9	<p><b>Files and streams:</b></p> <ul style="list-style-type: none"> <li>- Learn ifstream, ofstream, and fstream classes for processing and manipulating files.</li> <li>- Read and write data using the getline, get and put functions.</li> <li>- Study functions to test file existence and the end of a file.</li> <li>- Open a file for both input and output to update files .</li> </ul>	1	2
<b>Textbook:</b>		<p>Y. Daniel Liang, Introduction to Programming with C++, 3/E.</p> <p>Gary J. Bronson, C++ for Engineers and Scientists, 3/E.</p>	



<b>Detailed of practical Contents</b>			
	<b>Contents</b>	<b>Week no.</b>	<b>Hours</b>
<b>1</b>	Algorithms and draw flowchart exercises.	<b>1</b>	<b>2</b>
<b>2</b>	Develop a simple C++ program for console output using Visual C++. Read input from keyboard. Program with assignment statements and expressions familiar with C++ documentation, programming style. Experience various errors and debug logic errors .	<b>2</b>	<b>4</b>
<b>3</b>	Training on Selections statements.	<b>1</b>	<b>2</b>
<b>4</b>	Training on looping statements.	<b>1</b>	<b>2</b>
<b>5</b>	Training on functions.	<b>3</b>	<b>6</b>
<b>6</b>	Training on Arrays .	<b>2</b>	<b>4</b>
<b>8</b>	Training on Objects and classes.	<b>2</b>	<b>4</b>
<b>9</b>	Training on Files and streams.	<b>1</b>	<b>2</b>
<b>Textbook:</b>	Y. Daniel Liang, Introduction to Programming with C++, 3/E.		



<b>Department</b>	All Departments	<b>Major</b>	All Majors
<b>Course Name</b>	English 1	<b>Course Code</b>	ENG 305
<b>Prerequisites</b>		<b>Credit Hours (L,W,T)</b>	2 (2,0,2)

### Course description :

**English 1** is reading course. It is about improving and empowering Student's reading. Through exposure to different types of reading and approach to reading, the learners learn the strategies and practice for strengthening comprehension skills, building vocabulary, and test preparation.

### Topics :

- Reading for Pleasure:

lets students select their own reading materials to practice new strategies and broaden their vocabulary.

- Reading Comprehension Skills:

covers skimming, scanning, recognizing topics and main ideas, understanding sentences, and making inferences.

- Thinking Skills:

involves targeted practice in inference and analytic skills.

- Reading Faster:

helps students develop speed and flexibility in reading with high interest, short fiction and non-fiction selections.

- Reading Faster texts (which includes different types of reading) Fiction, Biography, Non-fiction

**Experiments** :if applicable it will support the theoretical topics.

### References :

- Skillful Reading: A Text and Workbook for Students of English as a Second Language  
by Amy L. Sonka , Elizabeth Whalley.
- Practice Makes Perfect Intermediate English Reading and Comprehension



by Diane Engelhardt

- NorthStar: Reading and Writing, Level 2, 3rd Edition

by Natasha Haugnes, Beth Maher

### Detailed of Theoretical Contents

	Contents	Week no.	Hours
1	Part 1- Extensive Reading	1	2
2	Part 2- Vocabulary Learning and Building	2-3	4
3	Part 3- Comprehension Skills	4	2
4	Previewing	5	2
5	Scanning	6	2
6	Making Inferences	7	2
7	Focusing on the Topic	8	2
8	Understanding Paragraphs	9	2
9	Identifying the Pattern	10	2
10	Thinking in English	11	2
11	Summarizing	12	2
12	Final Assessment	13	2
<b>Textbook:</b>	<u>Reading Power 2</u> (4th Edition) [Paperback] Linda Jeffries, Beatrice S. Mikulecky Pearson Education ESL; •ISBN-10: 0138143889 •ISBN-13: 978-0138143886		



<b>Department</b>	All Departments	<b>Major</b>	All Majors
<b>Course Name</b>	English 2	<b>Course Code</b>	ENG 306
<b>Prerequisites</b>	English 1	<b>Credit Hours</b> (L,W,T)	2 (2,0,2)

**Course description :**

**English 2** is a reading course for intermediate students of English. It builds on high-interest, authentic reading passages that serve as springboards for reading skills development, vocabulary building, Language analysis, and thought-provoking discussions and writing.

**Topics :**

- Usingcontext
- Skimming
- Topicvs.Mainidea
- Inferencing
- Using headings
- Usingheadings
- Usingcontext
- Reading Instructionalmaterials
- Findingdetails
- Main ideas
- Usingexamples

**Experiments:** if applicable it will support the theoretical topics.

**References :**

- Select Readings: Student Book Upper-Intermediate

by Linda Lee

- Academic Reading

by Kathleen T. McWhorter, Brette M Sember





<b>Detailed of Theoretical Contents</b>			
	<b>Content</b>	<b>Week no.</b>	<b>Hours</b>
1	Father teaches son a lesson	1	4
2	How to work In groups with classmates	2	4
3	An exchange student in the US	3	4
4	Disability leads to Success	4	4
5	The art of good speech making	5	4
6	The art of good speech making	6	4
7	An interview with Bill Gates about the future	7	4
8	Applying for effectively in	8	4
9	Spanish siesta tradition	9	4
10	How can the public be 'helped to understand I science?	10	4
11	Ways that geniuses think	11	4
Textbook:		Select readings intermediate by Linda Lee and Erik Gundersen. OXFORD UNIVERSITY PRESS ISBN 0-19-437475-0	



<b>Department</b>	All Departments	<b>Major</b>	All Majors
<b>Course Name</b>	English 3	<b>Course Code</b>	ELC 307
<b>Prerequisites</b>	English 2	<b>Credit Hours (L,W,T)</b>	2 (2,0,2)

**Course description :**

**English 3** is writing course. It is an intermediate course for English language. It helps students to master the standard organisational patterns of the paragraph and the basic concepts of essay writing. It integrates the study of rhetorical patterns and the writing process with extensive practice in sentence structure and mechanics.

**Topics :**

- Paragraph Format
- Narrative Paragraphs
- Paragraph Structure
- Descriptive Paragraphs
- logical Division of ideas
- Process Paragraphs
- Comparison/Contrast Paragraphs
- Definition Paragraphs
- Essay Organization
- Opinion Essays

**Experiments:** if applicable it will support the theoretical topics.

**References :**

- First Steps in Academic Writing , by Ann Hogue
- Academic Writing Student's Book , by Dorothy Zemach and Lisa Rumisek





Detailed of Theoretical Contents			
	Content	Week	Hours
1	Definition Paragraphs Paragraph 1: Paragraph 2: Sentence Structure Appositives and Adjective Clauses Appositives Adjective Clauses Complex Sentences with Adjective Clauses Subject Pronouns: who, which, that Object Pronouns: whom, which, that, and 0 (no pronoun) Clauses with when	1	4
2	Tim order Time Order Signal Sentence Structure Compound Sentences Coordinating Conjunctions Punctuation Three Comma Rules The Writing Process Freewriting Model: Freewriting	1	4
3	Three Parts of a Paragraph A Hawaiian Wedding The Topic Sentence Supporting Sentences The Concluding Sentence Punctuation Apostrophes The Writing Process Outlining Detailed Outlining	2	8
4	Model: Descriptive Paragraph Spatial Order Spatial Order Signals Topic Sentences for Descriptive Paragraphs Supporting Sentences for Descriptive Paragraphs Model: Descriptive Details Paragraph Unity Sentence Structure Model: Compound Sentences Compound Sentences Varying Sentence Openings Clustering	1	4



5	<p>Logical Division of Ideas Paragraph          Logical Division of Ideas          Coherence          Using Nouns and Pronouns Consistently          Transition Signals          Run-Ons and Comma Splices</p>	1	4
6	<p>Process Paragraph          Time Order          Time Order Signals          Clauses and Complex Sentences          Clauses          Complex Sentences          Subordinators</p>	2	8
7	<p>Comparison/Contrast Paragraphs          Paragraph 1: Right Brain/Left Brain          Paragraph 2: Two Job Applicants          Block Organization          Point-by-Point Organization          Comparison/Contrast Signals          Comparison Signals          Contrast Signals</p>	1	4



8	Definition Paragraphs Paragraph 1: Paragraph 2: Sentence Structure Appositives and Adjective Clauses Appositives Adjective Clauses Complex Sentences with Adjective Clauses Subject Pronouns: who, which, that Object Pronouns: whom, which, that, and 0 (no pronoun) Clauses with when	1	4
9	Three Parts of an Essay Essay Structure The Introductory Paragraph Body Paragraphs The Concluding Paragraph Transitions Between Paragraphs Essay Outlining Essay Outline Planning an Essay Step 1 Prewriting 162 Step 2 Organizing Step 2A Group Ideas Logically Step 2B Make an Outline	2	8
10	Opinion Essay The Right to Die Organization The Introductory Paragraph Body Paragraphs The Concluding Paragraph Developing Supporting Details Quotations Rules for Using and Punctuating Quotations Statistics	1	4



<b>Department</b>	All Departments	<b>Major</b>	All Majors
<b>Course Name</b>	English 4	<b>Course Code</b>	ENG 308
<b>Prerequisites</b>	English 3	<b>Credit Hours (L,W,T)</b>	2 (2,0,2)

**Course description :**

**English 4** is a writing course .It covers transactional writing versus academic writing, producing informative and persuasive documents through process writing, developing analytical writing techniques, constructing technical reports, and writing letters, memos, email and related forms. In addition, it addresses the task of formulating resumes and cover letters for employment.

**Topics :**

- Description of a mechanism
- Description of a process
- Proposals
- Feasibility report
- Laboratory report
- Business communications
- Resume and coverletters

**References :**

- Writing Academic English

by Alice Oshima, Ann Hogue

- Cambridge Academic English

By Martin Hewings, Michael McCarthy



<b>Detailed of Theoretical Contents</b>			
	<b>Contents</b>	<b>Week</b>	<b>Hours</b>
1	Ethical Considerations	1	2
2	Technical Definition		2
3	Descriptions of a Mechanism	2	2
4	Descriptions of a Process		2
5	Proposals	3	4
6	Progress Reports	4	4
7	Feasibility and Recommendation Reports	5	4
8	Laboratory and Project Reports	6	2
9	Instructions and Manuals		2
10	Research Reports	7	4
11	Abstracts and Summaries	8	2
12	Grammar, Style, and Punctuation		2
13	Documentation	9	4
14	Visuals	10	2
15	Electronic Publishing		2
16	Presentations and Briefings	11	4
17	Business Communications	12	4
18	Resumes, Cover Letters, and Interviews	13	2
<b>Textbook:</b>	Pocket Book of Technical Writing, 3 <sup>rd</sup> , By Finkelstein, L., McGraw Hill, USA, 2008		



<b>Department</b>	All Departments	<b>Major</b>	All Majors
<b>Course Name</b>	English 5	<b>Course Code</b>	ENG 309
<b>Prerequisites</b>	English 4	<b>Credit Hours (L,W,T)</b>	2 (2,0,2)

**Course description :**

**English 5** is a communication skill course. It is a course designed to develop students' oral, written, and interpersonal communication skills essential for life and work. Students will learn communication principles, strategies, and methods through discussions, exercises, and examples. They will be trained in how to communicate clearly and effectively in various social, business, and intercultural situations. In addition, they will learn and practice verbal, nonverbal, and electronic communication.

**Topics :**

- Whatis Communication?
- Effective ListeningSkills
- Verbal Communication
- Communicating Over the Phone
- Nonverbal Communication
- Written Communication
- CommunicatingElectronically

**Experiments:** if applicable it will support the theoretical topics.

**References :**

- Guide to Presentations , by Lynn Russell, Mary Munter
- Technical Communication , by Mike Markel



<b>Detailed of Theoretical Contents</b>			
	<b>Content</b>	<b>Week</b>	<b>Hours</b>
1	Good Communication Skills Lead to Success Different Forms of Communication Communication Is a Learned Activity Communication in the Workplace	1	4
2	What Is Listening? Listening to Learn Listening to Evaluate Listening Effectively Listening at Work	1	4
3	Your Voice Is a Tool Good Grammar Counts Starting a Conversation Ending a Conversation Speaking to Different Audiences Verbal Communication in the Workplace	2	8
4	Effective Phone Communication Using the Telephone Directory Long-Distance, Toll-Free, and Other Calls Phone Communication in the Workplace Using a Cell Phone	1	4
5	Body Action Body Language How Culture Affects Nonverbal Communication	2	8
6	Why Is Writing Important? Personal Letters Business Letters Business Memos Thank-You Notes Invitations	2	8
7	Communicating with E-mail Just Fax It to Me Instant Messaging Text Messaging How Technology Is Changing Workplace Communication	3	12



<b>Department</b>	General Study	<b>Major</b>	All Majors
<b>Course Name</b>	Physics (2)	<b>Course Code</b>	PHY325
<b>Prerequisites</b>	General physics	<b>Credit Hours (L,W,T)</b>	4(3,2,0)

**Course description :**

The course enables students to gain theoretical and practical background in physics. The course includes the development of skills and understanding of basic principles of Physical measurements. The student has to know the basic notions of the electric circuits and basic electronic devices like resistors and transistors, the measurement of characteristics of electric signals and the use of basic instrumentation and to know how to analyze any electric circuit using the different methods of analysis.. Also this course is designed to give the student a basic knowledge in the theory of electricity, electrostatics and magnetism.

**Topics :**

- Physical Measurements
- Direct-Current Circuits and Resistance
- Alternating Current Circuit (AC Circuit)
- Electrostatics
- The magnetic field
- Faraday's law of electromagnetic induction

**Experiments:** if applicable it will support the theoretical topics.

**References :**

- Microelectronics Digital and Analog Circuits and Systems – Jacob mill man- ISBN 0-07-042327. Update edition.
- Physics Principal and Problems- Robert B. Clark, Patrick Kenealy> ISBN 0-02826721-4.





<b>Detailed of Theoretical Contents</b>			
<b>Chapter</b>	<b>Contents</b>	<b>Week no.</b>	<b>Hours</b>
<b>1</b>	<b>Physical Measurements :</b> International System of Units, Base units, Derived Quantities, Derived units, Systems of units, Prefixes, Conversion between units, Fundamental Dimension, Derived dimension Dimensional Analysis, Dimensionally Homogeneous Equations, Examples and Problems.	<b>1-2</b>	<b>6</b>
<b>2</b>	<b>Direct-Current Circuits and Resistance:</b> Electric Current, Resistance and Ohm's Law, Energy and Power in Electric Circuits, Joule's Low, Resistors in Series and Parallel Kirchhoff's Rules, Circuits Containing Capacitors, Capacitors connected in series, Capacitors connected in parallel, RC Circuits, RC charging circuit, RC discharging circuit, Ammeters and Voltmeters, Examples and Problems	<b>3- 4 - 5</b>	<b>9</b>
<b>3</b>	<b>Alternating Current Circuit (AC Circuit):</b> AC source, Resistors in an AC circuit, rms current, rms voltage, Capacitors in an AC circuit, The capacitive reactance $X_C$ , Inductors in an AC circuit, The inductive reactance $X_L$ , The RLC series circuit, The impedance $Z$ , The phase angle, The maximum voltages across the elements, Power in an AC circuit, Resonance in a series RLC circuit, The resonance frequency, The transformer, Examples and Problems	<b>6- 7 - 8</b>	<b>9</b>
<b>4</b>	<b>Electrostatics:</b> electric charge, Coulomb's low, The electric field due to a point charge, The electric potential due to a point charge, stored energy in a capacitor, dielectric materiel in capacitor, examples and problems	<b>9- 10</b>	<b>6</b>



<b>5</b>	<p><b>The magnetic field:</b> Magnetic field and magnetic field lines, Ampere’s law: magnetic field due to a long straight wire, a circular conductor, a solenoid, Hall effect, Discovering of the electron and measuring e/m, The magnetic force, Examples and Problems</p> <p><b>Faraday’s law of electromagnetic induction</b></p>	<b>11- 12- 13</b>	<b>9</b>
<b>Textbook:</b>		<p>1- Fundamentals of physics (extended edition ) David Halliday Robert Resnick Gearal Walker John Wiley and Son , INC , ISBN -0 -471 – 57578-x. Fifth edition -1997</p> <p>2- Foundations Of Physics for Technology Colleges and universities freshmen . Dr. Marwan A. Alfahha Third edition 2012</p>	



<b>Detailed of practicals Contents</b>			
	<b>Contents</b>	<b>Week no.</b>	<b>Hours</b>
<b>1</b>	Electric Components/Measurements and Instruments	<b>1</b>	<b>2</b>
		<b>2</b>	<b>2</b>
<b>2</b>	Current-Voltage (I-V) characteristics Evaluation of two unknown resistances $R_1$ and $R_2$	<b>3</b>	<b>2</b>
		<b>4</b>	<b>2</b>
<b>3</b>	Evaluate the equivalent resistance of some resistors connected in series and in parallel.	<b>5</b>	<b>2</b>
		<b>6</b>	<b>2</b>
<b>4</b>	RC circuit :Charging and discharging a capacitor when switching DC on and off	<b>7</b>	<b>2</b>
		<b>8</b>	<b>2</b>
<b>5</b>	Oscillator and oscilloscope	<b>9</b>	<b>2</b>
		<b>10</b>	<b>2</b>
<b>6</b>	Determination of the specific charge of the electron	<b>11</b>	<b>2</b>
		<b>12</b>	<b>2</b>
<b>7</b>	Study of the deflection of electron in a magnetic field into a circular orbit	<b>13</b>	<b>2</b>
<b>Textbook:</b>			



<b>Department</b>	General Study	<b>Major</b>	All Majors
<b>Course Name</b>	Mathematics (3) Linear Algebra	<b>Course Code</b>	MAT 325
<b>Prerequisites</b>	General Math	<b>Credit Hours</b> (L,W,T)	4 (3,2,1)

**Course description :**

This course is designed to give the student a basic knowledge of the Complex numbers and its operations. The student has to know the basic notions of vector spaces and how to solve any linear systems of equations using Gauss-Jordan Elimination. Also this course is designed to give the student an introduction to the first and second order linear differential equations and to solve initial value problem by Laplace Transforms.

**Topics :**

- ComplexNumber
- Vectorsspaces
- Linearsystems of equations
- Introduction to differentialequation
- Laplace Transform

**Experiments:** if applicable it will support the theoretical topics.

**References :**

- C. Edward and D.Penny, Elementary Linear Algebra.
- John Auer, Linear Algebra with application
- Albert L.Rabenstion, elementarydifferentialequationwithLinearAlgebra



<b>Detailed of Theoretical Contents</b>			
	<b>Contents</b>	<b>Week no.</b>	<b>Hours</b>
<b>1</b>	Complex Number: Operation on complex number- Demoiver theorem- Solution of a quadratic equation	<b>1-2-3</b>	<b>18</b>
<b>2</b>	Vector spaces: Basic notions of vectors spaces- subspaces- Linear combination, linear independent, basis and dimension of vector spaces	<b>4-5-6</b>	<b>18</b>
<b>3</b>	Linear systems of equations: Gauss-Jordan elimination- Elementary row operations- reduced row echelon form- Solution of linear system by gauss- Jordan elimination	<b>7-8</b>	<b>12</b>
<b>4</b>	Introduction to differential equations: Some first order of differential equation-Second order linear differential equation	<b>9-10-11</b>	<b>18</b>
<b>5</b>	Laplace transforms: Solving initial value problem by Laplace transform	<b>12-13</b>	<b>12</b>
<b>Textbook:</b>		<b>C.Edward and D. penny, Elementary Linear Algebra</b>	



<b>Department</b>	General Study	<b>Major</b>	All Majors
<b>Course Name</b>	Mathematics (4) Discrete and Numerical Analysis	<b>Course Code</b>	MAT 326
<b>Prerequisites</b>	General Math	<b>Credit Hours</b> (L,W,T)	4 (3,2,1)

**Course description :**

This course is designed to give the student a basic knowledge of the Sequences and the Numerical series. The student has to know the basic notions of the numerical method and how to solve any linear or non linear equations using Newton-Raphson method . Also this course is designed to learning the student how to apply the Linear and Quadratic Lagrange interpolation and the Rectangular and Trapezoidal method for numerical integration. Further, this course gives to the students an introduction to Fourier series and Fourier transform.

**Topics :**

- Sequences
- NumericalSeries
- NumericalMethod
- Computer compilation
- Fourier Analysis

**Experiments:** if applicable it will support the theoretical topics.

**References :**

- C. Woodford,Chris Phillips, Numerical Methods with Worked Examples.
- T. W. Körner, Fourier analysis
- PremKythe,Dongming Wei, An Introduction to Linear and Nonlinear Finite Element Analysis



<b>Detailed of Theoretical Contents</b>			
	<b>Contents</b>	<b>Week no.</b>	<b>Hours</b>
<b>1</b>	Sequences: Some important limits-Convergence and divergence - Monotonocity and boundedness of sequences.	<b>1-2-3</b>	<b>18</b>
<b>2</b>	Numerical Series: Convergence and divergence series- some usual series ( Harmonic, Geometric and P-series)- Positive series (integral, ratio tests)- Positive series: Integral, ratio, root and comparison tests.  Power series: Interval of convergence-representation of function. Maclaurin and Taylor series.	<b>4-5-6</b>	<b>18</b>
<b>3</b>	Numerical Method: Newton-Raphson method for solving linear or nonlinear equations.  Interpolation: Linear and quadratic Lagrange interpolation.  Numerical integration: Rectangular and Trapezoidal method.  Some Application on MATLAB	<b>7-8-9-10</b>	<b>18</b>
<b>4</b>	Fourier Analysis: Fourier seris- Fourier transform	<b>11-12-13</b>	<b>9</b>
<b>Textbook:</b>		Keith E. Hirst, Keith Edwin Hirst, Numbers, Sequences and Series	



<b>Department</b>	General Study	<b>Major</b>	All Majors
<b>Course Name</b>	Engineering statistics and probability	<b>Course Code</b>	STA 425
<b>Prerequisites</b>	General Math	<b>Credit Hours (L,W,T)</b>	4 (3,2,1)

**Course description :**

This course is designed for students majoring in engineering of technology. Topics include: probability, random variables, discrete and continuous probability distributions, statistical process control, and parameters estimation.

**Topics :**

- Introduction to Probability Vector spaces
- Random variable and Probability Distributions
- Some Discrete Probability Distribution
- Some Continuous Probability Distribution
- Introduction to statistics
- Parameter Estimation

**Experiments:** if applicable it will support the theoretical topics.

**References :**

- Ross, S. *A First Course in Probability*, Fifth Edition
- Devore, Jay L., *Probability and Statistics for Engineering and the Sciences*, Eighth Edition





<b>Detailed of Theoretical Contents</b>			
	<b>Contents</b>	<b>Week no.</b>	<b>Hours</b>
<b>1</b>	Introduction to Probability: Random Experiment - Sample space – Event – Counting Sample space – Probability of an Event - The Axioms of Probability – Conditional Probability – Independent Events	<b>1-2-3</b>	<b>18</b>
<b>2</b>	Random variable and Probability Distributions: Concept of a Random Variable - Discrete Probability Distribution-Continuous Probability Distribution - Mean and Variance of a Random Variable	<b>4-5-6</b>	<b>18</b>
<b>3</b>	Some Discrete Probability Distribution: Bernoulli Trials – Binomial Distribution – Poisson Distribution	<b>7-8</b>	<b>12</b>
<b>4</b>	Some Continuous Probability Distribution: Continuous Uniform Distribution – Normal Distribution – Exponential Distribution	<b>9-10-11</b>	<b>18</b>
<b>5</b>	Introduction to statistics and Parameter Estimation: Sampling Theory – Sample Distribution Function – Samples and Statistics – Methods of Estimation (Point , Interval) – Confidence Interval	<b>12-13</b>	<b>12</b>
<b>Textbook:</b>			



<b>Department</b>	General Study	<b>Major</b>	All Majors
<b>Course Name</b>	Introduction to management & leadership	<b>Course Code</b>	GMS 335
<b>Prerequisites</b>		<b>Credit Hours</b> (L,W,T)	2 (2,0,2)

**Course description :**

This course prepares students with a comprehensive introduction to effective management principles and conduct. It aims at providing students with an introduction to contemporary management concepts and skills, and encourages students to put these concepts and skills into practice. This course is an introduction to the management function. It will focus on the theory and fundamental concepts of management including planning, organization, leadership, and control. This class will review the evolution of management thought, function and practice and will stress current approaches and emerging concepts.

**Topics :**

- introduction to management
- integrativemanagerial issues
- Planning
- Organizing
- Leading
- controlling

**Experiments :** if applicable it will support the theoretical topics.

**References :**

- Robbins, Stephen P, and Coulter, Mary. (2012) Management, 11th Edition, Prentice Hall



<b>Detailed of Theoretical Contents</b>			
	<b>Contents</b>	<b>Week no.</b>	<b>Hours</b>
<b>1</b>	Effective Management for Managers Today - Introduction to Management and Organizations. Management Yesterday and Today. Organizational Culture and Environment: The Constraints. Social Responsibility and Managerial Ethics.	<b>4</b>	<b>8</b>
<b>2</b>	Management Functions and Techniques - Decision-Making: The Essence of the Manager's Job. Foundations of Planning, planning tools and techniques. Organizational Structure and Design. Human.	<b>3</b>	<b>6</b>
<b>3</b>	Resource Management. Managing Change and Innovation. Understanding Groups and Teams. Leadership skills. Foundations of Control. Operations and Supply Chain Management.	<b>2</b>	<b>4</b>
<b>4</b>	Contemporary Management Competencies - Time Management Skills. Effective Communication Skills. Problem Solving Skills. Crisis Management	<b>4</b>	<b>8</b>
<b>Textbook:</b>		Robbins, Stephen P, and Coulter, Mary. (2012) Management, 11th Edition, Prentice Hall	



<b>Department</b>	General Study	<b>Major</b>	All Majors
<b>Course Name</b>	Communication Skills	<b>Course Code</b>	GMS 336
<b>Prerequisites</b>		<b>Credit Hours (L,W,T)</b>	2 (2,0,2)

**Course description :**

This course is intended to provide the students with plain understanding of the key subjects, matters and ideas educative in the field of communication studies.

**Topics :**

- Communication Today.
- Reports and proposals.
- Nonverbal communication.
- Interpersonal skills
- Interpersonal skills
- Negotiation skills
- Conflict management
- Intercultural communication
- Organizational communication
- Public communication
- Team communication

**Experiments:** if applicable it will support the theoretical topics.

**References:**

- Communicating in the 21st Century, 3rd edition By Baden Eunson 2011 1149 pages ISBN: 978-1-742-16617-9 John Wiley & Sons Limited Inc.



### Detailed of practical's Contents

	Contents	Week no.	Hours
<b>1</b>	Communication Today. Letters, emails and memos.	<b>1</b>	<b>2</b>
<b>2</b>	Reports and proposals. Academic writing the essay.	<b>2</b>	<b>2</b>
<b>3</b>	Nonverbal communication.	<b>3</b>	<b>2</b>
<b>4</b>	Interpersonal skills: 1- Emotional intelligence , Self- talk and	<b>4</b>	<b>2</b>
<b>5</b>	Interpersonal skills: 2- Listening, questioning and feed-back.	<b>5</b>	<b>2</b>
<b>6</b>	Negotiation skills	<b>6</b>	<b>2</b>
<b>7</b>	Conflict management *** Mid-term Exam	<b>7</b>	<b>2</b>
<b>8</b>	Intercultural communication	<b>8</b>	<b>2</b>
<b>9</b>	Organizational communication	<b>9</b>	<b>2</b>
<b>10</b>	Public communication	<b>10</b>	<b>2</b>
<b>11</b>	Team communication	<b>11</b>	<b>2</b>
<b>Textbook:</b>	<u>Communicating in the 21st Century, 3rd edition</u> By Baden Eunson 2011 1149 pages ISBN: 978-1-742- 16617-9 John Wiley & Sons Limited Inc.		



<b>Detailed of Theoretical Contents</b>			
	<b>Contents</b>	<b>Week no.</b>	<b>Hours</b>
<b>1</b>	Communicating in meetings	<b>12</b>	<b>2</b>
<b>2</b>	Employment communication and social media.  *** Final Exam.	<b>13</b>	<b>2</b>
<b>Textbook:</b>		<u>Communicating in the 21st Century, 3rd edition</u> By Baden Eunson 2011 1149 pages ISBN: 978-1-742- 16617-9 John Wiley & Sons Limited Inc.	



<b>Department</b>	General Study	<b>Major</b>	All Majors
<b>Course Name</b>	Engineering Project Management	<b>Course Code</b>	GMS 437
<b>Prerequisites</b>		<b>Credit Hours</b> (L, W, T)	(3,0,2)3

**Course description :**

The Engineering Project Management Course is intended to help meet the requirements of industry by educating undergraduate engineering students to understand engineering projects, project organizations and project management methods. Students completing this course will be able to work effectively in multidisciplinary engineering projects immediately after completion and to advance more rapidly within the project management organization and profession. The management of projects entails technical knowledge, engineering skills and management skills.

**Topics :**

- Introduction to project management
- Organizational influences and project life cycle.
- Project management processes
- Project integration management
- Project scope management.
- Project time management
- Project cost management.
- Project quality management
- Project humanresource management.
- Project communications management.
- Project risk management
- Project procurement management.
- Project stakeholder management



**Experiments:** if applicable it will support the theoretical topics.

**References :**

- A Guide to the Project Management Body of Knowledge (PMBOK® Guide), Fifth Edition, Project Management Institute , Project Management Institute © 2013





<b>Detailed of Theoretical Contents</b>			
	<b>Contents</b>	<b>Week no.</b>	<b>Hours</b>
<b>1</b>	1. Introduction to Project Management 1.1 History of Project Management 1.2 What is a Project? 1.2.1. The Relationships among Portfolios, Programs, and Projects. 1.3 What is Project Management? 1.4 Relationships among Portfolio Management, Program Management, Project Management, and Organizational Project Management 1.4.1 Program Management 1.4.2 Portfolio Management 1.4.3 Projects and Strategic Planning. 1.4.4 Project Management Office 1.5 Relationship between Project Management, Operations Management, and Organizational Strategy. 1.5.1 Operations and Project Management 1.5.2 Organizations and Project Management 1.6 Business Value 1.7 Role of the Project Manager 1.7.1 Responsibilities and Competencies of the Project Manager. 1.7.2 Interpersonal Skills of a Project Manager 1.8 Project Management Body of Knowledge	<b>1</b>	<b>3</b>



<p><b>2</b></p>	<p><b>2. ORGANIZATIONAL INFLUENCES AND PROJECT LIFE CYCLE.</b></p> <p>2.1 Organizational Influences on Project Management.</p> <p>2.1.1 Organizational Cultures and Styles</p> <p>2.1.2 Organizational Communications</p> <p>2.1.3 Organizational Structures.</p> <p>2.1.4 Organizational Process Assets.</p> <p>2.1.5 Enterprise Environmental Factors</p> <p>2.2 Project Stakeholders and Governance.</p> <p>2.2.1 Project Stakeholders.</p> <p>2.2.2 Project Governance.</p> <p>2.2.3 Project Success.</p> <p>2.3 Project Team</p> <p>2.3.1 Composition of Project Teams</p> <p>2.4 Project Life Cycle.</p> <p>2.4.1 Characteristics of the Project Life Cycle</p> <p>2.4.2 Project Phases.</p>	<p><b>2</b></p>	<p><b>3</b></p>
<p><b>3</b></p>	<p><b>3. PROJECT MANAGEMENT PROCESSES</b></p> <p>3.1 Common Project Management Process Interactions.</p> <p>3.2 Project Management Process Groups</p> <p>3.3 Initiating Process Group</p> <p>3.4 Planning Process Group</p> <p>3.5 Executing Process Group</p> <p>3.6 Monitoring and Controlling Process Group</p> <p>3.7 Closing Process Group</p>	<p><b>3</b></p>	<p><b>3</b></p>



	<p>3.8 Project Information</p> <p>3.9 Role of the Knowledge Areas</p>		
<b>4</b>	<p>4. PROJECT INTEGRATION MANAGEMENT</p> <p>4.1 Develop Project Charter</p> <p>4.2 Develop Project Management Plan.</p> <p>4.3 Direct and Manage Project Work</p> <p>4.4 Monitor and Control Project Work</p> <p>4.5 Perform Integrated Change Control</p> <p>4.6 Close Project or Phase</p>	<b>4</b>	<b>3</b>
<b>5</b>	<p>5. PROJECT SCOPE MANAGEMENT.</p> <p>5.1 Plan Scope Management.</p> <p>5.2 Collect Requirements</p> <p>5.3 Define Scope</p> <p>5.4 Create WBS</p> <p>5.5 Validate Scope.</p> <p>5.6 Control Scope</p>	<b>5</b>	<b>3</b>
<b>6</b>	<p>6. PROJECT TIME MANAGEMENT</p> <p>6.1 Plan Schedule Management</p> <p>6.2 Define Activities.</p> <p>6.3 Sequence Activities.</p> <p>6.4 Estimate Activity Resources.</p> <p>6.5 Estimate Activity Durations.</p> <p>6.6 Develop Schedule</p> <p>6.7 Control Schedule.</p>	<b>6</b>	<b>3</b>
<b>7</b>	<p>7. PROJECT COST MANAGEMENT.</p> <p>7.1 Plan Cost Management.</p>	<b>7</b>	<b>3</b>



	7.2 Estimate Costs. 7.3 Determine Budget 7.4 Control Costs.		
<b>8</b>	8. PROJECT QUALITY MANAGEMENT 8.1 Plan Quality Management. 8.2 Perform Quality Assurance. 8.3 Control Quality.	<b>8</b>	<b>3</b>
<b>9</b>	9. PROJECT HUMAN RESOURCE MANAGEMENT. 9.1 Plan Human Resource Management. 9.2 Acquire Project Team 9.3 Develop Project Team 9.4 Manage Project Team	<b>9</b>	<b>3</b>
<b>10</b>	10. PROJECT COMMUNICATIONS MANAGEMENT. 10.1 Plan Communications Management. 10.2 Manage Communications. 10.3 Control Communications.	<b>10</b>	<b>3</b>
<b>11</b>	11. PROJECT RISK MANAGEMENT 11.1 Plan Risk Management. 11.2 Identify Risks. 11.3 Perform Qualitative Risk Analysis 11.4 Perform Quantitative Risk Analysis 11.5 Plan Risk Responses. 11.6 Control Risks.	<b>11</b>	<b>3</b>
<b>12</b>	12. PROJECT PROCUREMENT MANAGEMENT.	<b>12</b>	<b>3</b>



	12.1 Plan Procurement Management. 12.2 Conduct Procurements 12.3 Control Procurements. 12.4 Close Procurements		
<b>13</b>	13. PROJECT STAKEHOLDER MANAGEMENT 13.1 Identify Stakeholders 13.2 Plan Stakeholder Management. 13.3 Manage Stakeholder Engagement 13.4 Control Stakeholder Engagement.	<b>13</b>	<b>3</b>
<b>Textbook:</b>	A Guide to the Project Management Body of Knowledge (PMBOK® Guide), Fifth Edition, Project Management Institute, Project Management Institute © 2013.		

<b>Detailed of Tatorial Contents</b>			
	<b>Contents</b>	<b>Week no.</b>	<b>Hours</b>
<b>1</b>	Workshop: Forming Project Team and Project Selection	<b>1</b>	<b>2</b>
<b>2</b>	Workshop: Defining Project Business Case	<b>2</b>	<b>2</b>
<b>3</b>	Workshop: Developing Project Charter	<b>3</b>	<b>2</b>
<b>4</b>	Workshop: Project Configuration & Integration	<b>4</b>	<b>2</b>
<b>5</b>	Workshop: Collect Project Requirements, Creating Project Scope Statement, and Developing Project WBS	<b>5</b>	<b>2</b>
<b>6</b>	Workshop: Developing Project Schedule Using Project Management Tools	<b>6</b>	<b>2</b>
<b>7</b>	Workshop: Developing Project Budget and Cash flow	<b>7</b>	<b>2</b>
<b>8</b>	Workshop: Developing Project Quality Management Plan	<b>8</b>	<b>2</b>



<b>9</b>	Workshop: Developing Project HR Management Plan	<b>9</b>	<b>2</b>
<b>10</b>	Workshop: Developing Project Communications Management Plan	<b>10</b>	<b>2</b>
<b>11</b>	Workshop: Developing Project Risk Management Plan	<b>11</b>	<b>2</b>
<b>12</b>	Workshop: Developing Project Procurement Management Plan	<b>12</b>	<b>2</b>
<b>13</b>	Workshop: Developing Project Stakeholders Management Plan	<b>13</b>	<b>2</b>
<b>Textbook:</b>		A guide to the project management body of knowledge (pmbok® guide), fifth edition, project management institute, project management institute © 2013.	



<b>Department</b>	General Study	<b>Major</b>	All Majors
<b>Course Name</b>	Quality Tools and Applications	<b>Course Code</b>	GMS 438
<b>Prerequisites</b>		<b>Credit Hours (L, W, T)</b>	3 (3,0,2)

**Course description :**

This course gives the student basic foundation knowledge on Quality Management and its Tools and Applications, this course has been design to help the student to understand the quality concept as a major successful factor for the competitiveness at any sector.

By the end of this course, the student should know when, why and how to apply the quality concepts and tools successfully on his workplace.

**Topics :**

- Quality Management as a Concept
- Quality Management as a Culture
- Quality Management as a Strategic Planning
- Overview on Quality Management Tools
- ProblemsSolving and DecisionsMaking
- Optimizing and ControllingProcesses
- Implementing the Quality Management

**Experiments:**if applicable it will support the theoretical topics.

**References :**

- Introduction to Total Quality Management for Production, Processing and Services. (Sixth Edition)
- By David L. Goetsch and Stanley B. Davis



<b>Detailed of Theoretical Contents</b>			
	<b>Contents</b>	<b>Week no.</b>	<b>Hours</b>
<b>1</b>	Quality Management as a Concept: <ul style="list-style-type: none"> <li>- How Quality is defined.</li> <li>- 8 principles of Total Quality Management.</li> <li>- Customer Satisfaction.</li> </ul>	<b>1-3</b>	<b>15</b>
<b>2</b>	Quality Management as a Culture: <ul style="list-style-type: none"> <li>- Understanding the quality culture VS. the traditional culture</li> <li>- Change management</li> </ul>	<b>4-5</b>	<b>10</b>
<b>3</b>	Quality Management as a Strategic Planning: <ul style="list-style-type: none"> <li>- Developing Plan (vision, mission and objectives)</li> <li>- Execution Plan (action plan, operations, KPIs)</li> </ul>	<b>6-7</b>	<b>10</b>
<b>4</b>	Overview on Quality Management Tools: <ul style="list-style-type: none"> <li>- The basic 7 tools for quality management</li> </ul>	<b>8</b>	<b>5</b>
<b>5</b>	Problems Solving and Decisions Making: <ul style="list-style-type: none"> <li>- Root Cause analysis techniques.</li> <li>- Decision making support techniques.</li> </ul>	<b>9-10</b>	<b>10</b>
<b>6</b>	Optimizing and Controlling Processes: <ul style="list-style-type: none"> <li>- Statistical Process Control (SPC) applications.</li> <li>- Control Charts.</li> </ul>	<b>11-12</b>	<b>10</b>
<b>7</b>	Implementing the Quality Management: <ul style="list-style-type: none"> <li>- Plan, Do, Check, Act (implementation project)</li> </ul>	<b>13</b>	<b>5</b>
<b>Textbook:</b>	Quality Management Introduction to Total Quality Management for Production, Processing and Services. (Sixth Edition) By David L. Goetsch and Stanley B. Davis		





<b>Department</b>	General Study	<b>Major</b>	All Majors
<b>Course Name</b>	Engineering Economy	<b>Course Code</b>	GMS 439
<b>Prerequisites</b>		<b>Credit Hours</b> (L, W, T)	(2,0,2)2

**Course description :**

This course covers the basics of economic analysis from an engineering perspective. The concepts and techniques required to facilitate the evaluation and comparison of investment opportunities on an economic basis are presented, along with the corresponding Excel spreadsheet functions. Topics include: foundations of engineering economy, nominal and effective interest rates, engineering economy factors, present worth analysis, annual worth analysis, rate of return analysis, benefit/cost analysis and public sector economics, breakeven and payback analysis, and depreciation methods.

**Topics:**

- Foundations of Engineering Economy
- Engineering Economy Factor
- Nominal and Effective Interest Rates
- Present Worth (PW) Analysis
- Annual Worth (AW) Analysis
- Rate of Return (ROR) Analysis
- Benefit /Cost (B/C) Analysis and Public Sector Economics
- Breakeven and PaybackAnalysis

**Experiments:** if applicable it will support the theoretical topics.

**References :**

- William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling, "Engineering Economy", 15th Edition, Printice Hall, ISBN 978-0132554909.
- Jerald J. Thuesen and W. J. Fabrycky, " Engineering Economy", 9th Edition, Printice Hall, ISBN 978-0130281289.



<b>Details of Theoretical Contents</b>			
	<b>Contents</b>	<b>Week no.</b>	<b>Hours</b>
<b>1</b>	<p><b>Foundations of Engineering Economy:</b></p> <ul style="list-style-type: none"> <li>- Engineering economics: description and role in decision making process.</li> <li>- How to perform an Engineering Economy study.</li> <li>- Interest rate and rate of return.</li> <li>- Engineering economy terminology and symbols.</li> <li>- Cash flows: estimation and diagramming.</li> <li>- Economic Equivalence.</li> <li>- Simple and compound interests.</li> <li>- Meaning and use of Minimum Attractive Rate of Return (MARR).</li> <li>- Spreadsheets use in engineering economy.</li> </ul>	<b>1-2</b>	<b>4</b>
<b>2</b>	<p><b>Engineering Economy Factors:</b></p> <ul style="list-style-type: none"> <li>- Deriving and using the following factors: F/P, P/F, P/A, A/P, F/A, A/F, P/G, and A/G.</li> <li>- Linear interpolation of factors values.</li> <li>- Combining factors (Calculations pertaining to Shifted uniform series and randomly placed single amounts).</li> </ul>	<b>3-4</b>	<b>4</b>
<b>3</b>	<p><b>Nominal and Effective Interest Rates:</b></p> <ul style="list-style-type: none"> <li>- Difference between nominal and effective interest rates.</li> <li>- Calculating the effective interest rate.</li> </ul>	<b>5</b>	<b>2</b>



	<ul style="list-style-type: none"> <li>- Equivalence calculations under single and series cash flows in the case where payment and compounding periods are unequal.</li> </ul>		
4	<p><b>Present Worth (PW) Analysis:</b></p> <ul style="list-style-type: none"> <li>- Formulating alternatives.</li> <li>- PW analysis of equal- life alternatives.</li> <li>- PW analysis of different- life alternatives.</li> <li>- Future worth analysis.</li> </ul>	6-7	3
5	<p><b>Annual Worth (AW) Analysis:</b></p> <ul style="list-style-type: none"> <li>- Advantages and uses of AW analysis.</li> <li>- Calculation of Capital Recovery (CR) and AW values.</li> <li>- Evaluating alternatives by AW analysis.</li> </ul>	8	2
6	<p><b>Rate of Return (ROR) Analysis:</b></p> <ul style="list-style-type: none"> <li>- Interpretation of a ROR value.</li> <li>- ROR calculation using a PW or AW relation.</li> <li>- Using ROR analysis to evaluate a single project.</li> <li>- Special considerations when using the ROR method.</li> <li>- Incremental ROR analysis and the issue of inconsistent rankings.</li> <li>- Using incremental ROR analysis to compare two alternatives.</li> <li>- Using incremental ROR analysis to compare several alternatives .</li> </ul>	9-10	5
7	<p><b>Benefit /Cost (B/C) Analysis and Public Sector Economics:</b></p> <ul style="list-style-type: none"> <li>- The fundamental differences between public and private sector projects.</li> </ul>	11	2



	- B/C analysis for a single project.		
<b>8</b>	<b>Breakeven and Payback Analysis:</b> - Breakeven analysis for a single project. - Payback analysis.	<b>12</b>	<b>2</b>
<b>9</b>	<b>Depreciation Methods:</b> - Definition of asset depreciation. - The Straight Line (SL) method. - The Declining Balance (DB) method. - The unit-of -production (UOP) method.	<b>13</b>	<b>2</b>
<b>Textbook:</b>		Leland Blank and Anthony Tarquin., " Engineering Economy", 7 <sup>th</sup> Edition, McGraw-Hill , ISBN 978 – 0073376301.	



<b>Department</b>	<b>Computer Department</b>	<b>Major</b>	<b>Programming</b>
<b>Course Name</b>	<b>Computer Programming</b>	<b>Course Code</b>	<b>PRG 345</b>
<b>Prerequisites</b>		<b>Credit Hours</b> <i>(L, W, T)</i>	<b>3 (2, 2, 2)</b>

Course description :

This course introduces fundamental structured and object-oriented programming concepts and techniques, using Java, and is intended for all who plan to use computer programming in their studies and careers. topics covered include variables, arithmetic operators, control structures, arrays, functions, recursion, dynamic memory allocation, class usage and class writing. Program design and testing are also covered, in addition to more advanced object-oriented concepts including inheritance and exceptions as time permits.

Topics :

- Introduction to Programming
- Data Types
- Selective Execution
- Loops
- Arrays
- Functions
- inheritance
- Exceptions

Experiments: if applicable it will support the theoretical topics.

References :

Java SE 7 Programmer I, Exam Number: 1Z0-803  
Oracle Certified Associate, Java SE 7 Programmer



<b>Detailed of Theoretical Contents</b>			
	<b>Contents</b>	<b>Week no.</b>	<b>Hours</b>
1	Introduction to Programming <ul style="list-style-type: none"> <li>• Define the scope of variables</li> <li>• Define the structure of a class</li> <li>• Create executable applications with a main method</li> <li>• Import other packages to make them accessible in your code</li> </ul>	<b>1</b>	4
2	Working With Java Data Types <ul style="list-style-type: none"> <li>• Declare and initialize variables</li> <li>• Differentiate between object reference variables and primitive variables</li> <li>• Read or write to object fields</li> <li>• Explain an Object's Lifecycle (creation, "dereference" and garbage collection)</li> <li>• Call methods on objects</li> <li>• Manipulate data using the StringBuilder class and its methods</li> <li>• Creating and manipulating Strings</li> </ul>	2, 3	8
3	Using Operators and Decision Constructs <ul style="list-style-type: none"> <li>• Use operators</li> <li>• Use parenthesis to override operator precedence</li> <li>• Test equality between Strings and other objects using == and equals ()</li> <li>• Create if and if/else constructs</li> <li>• Use a switch statement</li> </ul>	<b>4, 5</b>	8
4	Creating and Using Arrays <ul style="list-style-type: none"> <li>• Declare, instantiate, initialize and use a one-dimensional array</li> <li>• Declare, instantiate, initialize and use multi-dimensional array</li> <li>• Declare and use an ArrayList</li> </ul>	<b>6, 7</b>	8
5	Using Loop Constructs <ul style="list-style-type: none"> <li>• Create and use while loops</li> <li>• Create and use for loops including the enhanced for loop</li> <li>• Create and use do/while loops</li> <li>• Compare loop constructs</li> <li>• Use break and continue</li> </ul>	<b>8, 9</b>	8
6	Working with Methods and Encapsulation <ul style="list-style-type: none"> <li>• Create methods with arguments and return values</li> <li>• Apply the static keyword to methods and fields</li> <li>• Create an overloaded method</li> <li>• Differentiate between default and user defined constructors</li> <li>• Create and overload constructors</li> <li>• Apply access modifiers</li> <li>• Apply encapsulation principles to a class</li> </ul>	<b>10, 11</b>	8



7	<p>Working with Inheritance</p> <ul style="list-style-type: none"> <li>• Implement inheritance</li> <li>• Develop code that demonstrates the use of polymorphism</li> <li>• Differentiate between the type of a reference and the type of an object</li> <li>• Determine when casting is necessary</li> <li>• Use super and this to access objects and constructors</li> <li>• Use abstract classes and interfaces</li> </ul>	<b>12</b>	4
8	<p>Handling Exceptions</p> <ul style="list-style-type: none"> <li>• Differentiate among checked exceptions, RuntimeExceptions and Errors</li> <li>• Create a try-catch block and determine how exceptions alter normal program flow</li> <li>• Describe what Exceptions are used for</li> <li>• Invoke a method that throws an exception</li> <li>• Recognize common exception classes and categories</li> </ul>	<b>13</b>	4
<b>Textbook:</b>		<ul style="list-style-type: none"> <li>• <u><a href="#">Intro to Java Programming, Comprehensive Version (10th Edition) by Y. Daniel Liang(Jan 6, 2014).</a></u></li> <li>• <u><a href="#">Introduction to Programming with C++ (3rd Edition) by Y. Daniel Liang(Jan 14, 2013).</a></u></li> <li>• Programming C# 5.0: Building Windows 8, Web, and Desktop Applications for the .NET 4.5 Framework.</li> <li>• C# 2010 for Programmers, 4th Edition by Deitel &amp; Deitel (2010) . ISBN: 0132618206</li> </ul>	



<b>Detailed of practicals Contents</b>			
	<b>Contents</b>	<b>Week no.</b>	<b>Hours</b>
<b>1</b>	LAB: Introduction to Programming	<b>1</b>	<b>2</b>
<b>2</b>	LAB: Data Types	2, 3	<b>4</b>
<b>3</b>	LAB: Selective Execution	<b>4, 5</b>	<b>4</b>
<b>4</b>	LAB: Loops	<b>6, 7</b>	<b>4</b>
<b>5</b>	LAB: Arrays	<b>8, 9</b>	<b>4</b>
<b>6</b>	LAB: Methods and Encapsulation	<b>10, 11</b>	<b>4</b>
<b>7</b>	LAB: Inheritance	<b>12</b>	<b>2</b>
<b>8</b>	LAB: Exceptions	<b>13</b>	<b>2</b>
<b>Textbook:</b>	Sun/Oracle Java tutorial, available at: <a href="http://docs.oracle.com/javase/tutorial/index.html">http://docs.oracle.com/javase/tutorial/index.html</a>		





<b>Department</b>	<b>Computer Technology</b>	<b>Major</b>	<b>Programming</b>
<b>Course Name</b>	<b>Data Structure</b>	<b>Course Code</b>	<b>PRG 377</b>
<b>Prerequisites</b>	<b>PRG 345</b>	<b>Credit Hours (L,W,T)</b>	<b>3 (2, 2, 2)</b>

Course description :

This course is designed to cover fundamental data structures and algorithms. This course will sharpen students' programming skills, and expand their knowledge of basic data structures and algorithms. The course extends Object-Oriented Programming techniques to cover data structures, such as hash tables, linked lists, stacks, queues, and binary trees, and provides an introduction to the analysis of algorithms that operate on those structures.

Topics :

- Elementary algorithm analysis
- Data representation, algorithms for data structures
- Stacks, queues, applications
- Linear lists, linked lists
- Hashing, Recursion
- Tree structures
- Sorting and search strategies
- Data management, disk files

Experiments : if applicable it will support the theoretical topics.

References :

- *Introduction to Algorithms*, by Cormen, Leiserson, Rivest, and Stein
- *Algorithm Design*, by Kleinberg and Tardos
- *Data Structures and Algorithms in Java*, by Adam Drozdek
- *Data Structures and Algorithms Analysis in Java*, by Mark Allen Weiss



<b>Detailed of Theoretical Contents</b>			
	<b>Contents</b>	<b>Week no.</b>	<b>Hours</b>
<b>1</b>	Intreoduction to Data Structure <ul style="list-style-type: none"> <li>• Definition</li> <li>• Classification on Data Structure</li> <li>• Opreations on Data Structure</li> </ul>	<b>1</b>	<b>2</b>
<b>2</b>	Lists <ul style="list-style-type: none"> <li>• Definition</li> <li>• Abstract Data Types (ADT)</li> <li>• The List ADT</li> <li>• Array Lists</li> <li>• Linked Lists</li> </ul>	<b>2</b>	<b>2</b>
<b>3</b>	Stacks <ul style="list-style-type: none"> <li>• Definition</li> <li>• The stack ADT</li> <li>• The Stack model</li> </ul>	<b>3</b>	<b>2</b>
<b>4</b>	Queues <ul style="list-style-type: none"> <li>• Definition</li> <li>• The Queue ADT</li> <li>• The Queue model</li> </ul>	4	2
<b>5</b>	Hashing <ul style="list-style-type: none"> <li>• Definition</li> <li>• Hash function</li> <li>• Hash tables</li> </ul>	5	2
<b>6</b>	Recursion <ul style="list-style-type: none"> <li>• Definition</li> <li>• Writing recursive programs</li> </ul>	6	2
<b>7</b>	Tree <ul style="list-style-type: none"> <li>• Definition</li> <li>• Binary Tree</li> <li>• Binary search tree</li> <li>• Sets</li> </ul>	7,8	2



	<ul style="list-style-type: none"> <li>• Maps</li> <li>• Traversal of Binary tree</li> </ul>		
8	<p>Searching and sorting technique</p> <ul style="list-style-type: none"> <li>• Basic search technique</li> <li>• Search algorithm</li> <li>• Sequential search</li> <li>• Binary search</li> </ul>	9	2
9	<p>Searching and sorting technique</p> <ul style="list-style-type: none"> <li>• Bubble Sort</li> <li>• Merge Sort</li> <li>• Insertion Sort</li> <li>• Selection sort</li> <li>• Quick Sort</li> </ul>	10	2
10	<p>Graph algorithms</p> <ul style="list-style-type: none"> <li>• Definitions</li> <li>• Representation of Graphs</li> <li>• Shortest-Path Algorithms</li> <li>• Unweighted Shortest Paths</li> </ul>	11, 12	2
<p><b>Textbook:</b></p>		<p><i>Data Structures and Algorithms Analysis in Java</i>, by Mark Allen Weiss</p> <p><i>Data Structures and Algorithms in Java</i>, by Adam Drozdek</p>	



### Detailed of practicals Contents

	Contents	Week no.	Hours
<b>1</b>	Getting started IDE and Tools Complexity analysis The Big-O notation	<b>1</b>	<b>4</b>
<b>2</b>	Lists <ul style="list-style-type: none"> <li>• Dynamic Arrays</li> <li>• Singly Linked list</li> <li>• Doubly Linked list</li> </ul>	<b>2</b>	<b>4</b>
<b>3</b>	Stacks <ul style="list-style-type: none"> <li>• Stacks Model</li> <li>• Implementation of Stacks</li> </ul>	<b>3</b>	<b>4</b>
<b>4</b>	Queues <ul style="list-style-type: none"> <li>• Queues Model</li> <li>• Implementation of Queues</li> <li>• Priority Queues</li> </ul>	<b>4</b>	<b>4</b>
<b>5</b>	Hashing <ul style="list-style-type: none"> <li>• Hash functions</li> <li>• Collision resolution</li> <li>• Deletion</li> </ul>	<b>5</b>	<b>4</b>
<b>6</b>	Recursion <ul style="list-style-type: none"> <li>• Method calls</li> <li>• Recursion implementation</li> </ul>	<b>6</b>	<b>4</b>
<b>7</b>	Trees <ul style="list-style-type: none"> <li>• Trees</li> <li>• Binary search trees</li> <li>• Implementing Binary trees</li> <li>• Tree traversal</li> </ul>	<b>7, 8</b>	<b>4</b>
<b>8</b>	Sorting <ul style="list-style-type: none"> <li>• Insertion sort</li> <li>• Selection sort</li> <li>• Bubble sort</li> <li>• Quick Sort</li> </ul>	<b>9, 10</b>	<b>4</b>
<b>9</b>	Graphs <ul style="list-style-type: none"> <li>• Graph Representation</li> <li>• Graph traversal</li> <li>• Shortest paths</li> <li>• Spanning trees</li> </ul>	<b>11,12</b>	<b>4</b>

**Textbook:**

*Data Structures and Algorithms in Java*, by Adam Drozdek

*Data Structures and Algorithms Analysis in Java*, by Mark Allen Weiss



<b>Department</b>	<b>Computer Department</b>	<b>Major</b>	<b>Programming</b>
<b>Course Name</b>	<b>Advance Computer Programming</b>	<b>Course Code</b>	<b>PRG 378</b>
<b>Prerequisites</b>	<b>PRG 377</b>	<b>Credit Hours (L, W, T)</b>	<b>3 (2, 2, 0)</b>

Course description :

This course introduces Advanc fueature in server topics in programming. These include Implementing a New Class, Designing and Developing a Class, Inheritance , Building User Interfaces, Input/Output , Threads .

Topics :

- 1- Implementing a New Class
- 2- Designing and Developing a Class
- 3- Inheritance
- 4- Building User Interfaces
- 5- Input/Output
- 6- Threads

Experiments :

if applicable it will support the theroticals topics.

References :

- Dan R. Olsen, Jr., Building Interactive Systems: Principles for Human-Computer Interaction, Course Technology, 2010. ISBN 1-4239-0248-3 (Chapters 1-13).
- Y. Daniel Liang, Introduction to Java Programming, Prentice Hall ("Core", "Brief", or any other edition -- Or another introductory book on Java that you prefer.).
- C# 2010 for Programmers, 4th Edition by Deitel & Deitel (2010) . ISBN: 0132618206



<b>Detailed of Theoretical Contents</b>			
	<b>Contents</b>	<b>Week no.</b>	<b>Hours</b>
<b>1</b>	<b>Implementing a New Class</b> <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Implementing a Class</li> <li>• The Role of Aggregation</li> <li>• Simple Static Aggregations</li> <li>• More Complex Static Aggregation</li> <li>• Dynamic Aggregation</li> <li>• The "this" Variable</li> <li>• Copying Mutable Objects</li> </ul>	<b>2</b>	<b>4</b>
<b>2</b>	<b>Designing and Developing a Class</b> <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Designing a Class</li> <li>• Designing Complex Logic</li> <li>• Debugging</li> <li>• Organizing Related Classes in Packages</li> <li>• Documenting a Class</li> </ul>	<b>2</b>	<b>4</b>
<b>3</b>	<b>Inheritance</b> <ol style="list-style-type: none"> <li>1- Introduction</li> <li>2- Using Inheritance to Share Implementation</li> <li>3- Inheriting Methods and Data</li> <li>4- Replacing Inherited Methods</li> <li>5- Extending Inherited Methods</li> <li>6- Hiding Inherited Methods</li> <li>7- Type Casting</li> <li>8- Dynamic Binding, Abstract Methods, and Polymorphism</li> <li>9- Refactoring of Base Classes</li> <li>10- Designing a Class Hierarchy</li> <li>11- Design Patterns</li> </ol>	<b>2</b>	<b>4</b>
<b>4</b>	<b>Building User Interfaces</b> <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Structure of a User Interface</li> <li>• Two Simple Applications</li> <li>• Event Handling</li> <li>• Handling Events in a Simple Application</li> <li>• Menus</li> <li>• Checkboxes</li> <li>• Lists</li> <li>• Dialogues</li> <li>• Scrollbars</li> <li>• TextFields</li> <li>• Text Fonts</li> </ul>	<b>3</b>	<b>6</b>



	<ul style="list-style-type: none"> <li>• Images</li> <li>• Custom Components</li> <li>• Layout Managers</li> </ul>		
5	Input/Output <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Binary I/O</li> <li>• Text I/O</li> <li>• Random Access File I/O</li> <li>• Object I/O</li> <li>• I/O Filtering</li> </ul>	2	4
6	Threads <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Independent Threads</li> <li>• Synchronized Threads</li> <li>• Distributed Concurrency</li> </ul>	2	4
<b>Textbook:</b>	<ul style="list-style-type: none"> <li>• <u>Intro to Java Programming, Comprehensive Version (10th Edition) by Y. Daniel Liang(Jan 6, 2014).</u></li> <li>• <u>Introduction to Programming with C++ (3rd Edition) by Y. Daniel Liang(Jan 14, 2013).</u></li> <li>• <u>Programming C# 5.0: Building Windows 8, Web, and Desktop Applications for the .NET 4.5 Framework.</u></li> </ul>		



<b>Detailed of practicals Contents</b>			
	<b>Contents</b>	<b>Week no.</b>	<b>Hours</b>
<b>1</b>	LAB: Implementing a New Class	<b>2</b>	<b>4</b>
<b>2</b>	LAB: Designing and Developing a Class	<b>2</b>	<b>4</b>
<b>3</b>	LAB: Inheritance	<b>2</b>	<b>4</b>
<b>4</b>	LAB: Building User Interfaces	<b>3</b>	<b>6</b>
<b>5</b>	LAB: Input/Output	<b>2</b>	<b>4</b>
<b>6</b>	LAB: Threads	<b>2</b>	<b>4</b>
<b>Textbook:</b>	1. Sun/Oracle Java tutorial, available at: <a href="http://docs.oracle.com/javase/tutorial/index.html">http://docs.oracle.com/javase/tutorial/index.html</a>  2. Java SE 7 Programmer I, Exam Number: 1Z0-803 Oracle Certified Associate, Java SE 7 Programmer		





<b>Department</b>	<b>Computer Department</b>	<b>Major</b>	<b>Programming</b>
<b>Course Name</b>	<b>Enterprise Information Systems</b>	<b>Course Code</b>	<b>PRG 475</b>
<b>Prerequisites</b>	<b>PRG 375</b>	<b>Credit Hours (L, W, T)</b>	<b>4 (2, 4, 0)</b>

Course description :

The course provides an overview of Enterprise Resource Planning software systems and their role within an organization. It introduces key concepts integrated information systems and explains why such systems are valuable to businesses.

Lab materials explain how the fundamental business processes interact with SAP ERP in the functional areas such as Sales and Distribution, Production Planning, Financial Accounting, and Human Capital Management.

Topics :

- 1- Introduction to Enterprise Systems for Management.
- 2- Systems Integration
- 3- Enterprise Systems Architecture.
- 4- Development Life Cycle.
- 5- Implementation Strategies.
- 6- Software and Vendor Selection.

References :

- Luvai Motiwalla, Enterprise Systems for Management, 2013.
- Simha R. Magal, Integrated Business Processes with ERP Systems, 2012.
- Introduction to SAP ERP Using Global Bike Inc 2.20,



<b>Detailed of Theoretical Contents</b>			
	<b>Contents</b>	<b>Week no.</b>	<b>Hours</b>
<b>1</b>	Introduction to Enterprise Systems for Management.	<b>1,2</b>	<b>4</b>
<b>2</b>	Systems Integration	<b>3,4</b>	<b>4</b>
<b>3</b>	Enterprise Systems Architecture.	<b>5,6</b>	<b>4</b>
<b>4</b>	Development Life Cycle.	<b>7,8</b>	<b>4</b>
<b>5</b>	Implementation Strategies.	<b>9,10</b>	<b>4</b>
<b>6</b>	Software and Vendor Selection	<b>11,12</b>	<b>4</b>
<b>Textbook:</b>	<ul style="list-style-type: none"> <li>• Luvai Motiwalla, Enterprise Systems for Management, 2013.</li> <li>• Simha R. Magal, Integrated Business Processes with ERP Systems, 2012.</li> </ul>		



<b>Detailed of practicals Contents</b>			
	<b>Contents</b>	<b>Week no.</b>	<b>Hours</b>
<b>1</b>	SAP Introduction	<b>1</b>	<b>4</b>
<b>2</b>	SAP ERP Navigation	<b>2</b>	<b>4</b>
<b>3</b>	GBI Introduction	<b>3</b>	<b>4</b>
<b>4</b>	Sales Process / Sales & Distribution (SD)	<b>4</b>	<b>4</b>
<b>5</b>	Purchasing Process / Materials Management (MM)	<b>5</b>	<b>4</b>
<b>6</b>	Manufacturing Planning Process / Production Planning (PP)	<b>6</b>	<b>4</b>
<b>7</b>	Financial Accounting (FI)	<b>7</b>	<b>4</b>
<b>8</b>	Management Accounting / Controlling (CO)	<b>8</b>	<b>4</b>
<b>9</b>	Human Capital Management (HCM)	<b>9</b>	<b>4</b>
<b>10</b>	Warehouse Management (WM)	<b>10</b>	<b>4</b>
<b>11</b>	Project System (PS)	<b>11</b>	<b>4</b>
<b>12</b>	Enterprise Asset Management (EAM)	<b>12</b>	<b>4</b>
<b>Textbook:</b>	<ul style="list-style-type: none"> <li>• Introduction to SAP ERP Using Global Bike Inc 2.20,</li> <li>• Simha R. Magal, Integrated Business Processes with ERP Systems, 2012.</li> </ul>		



<b>Department</b>	<b>Computer Department</b>	<b>Major</b>	<b>Programming</b>
<b>Course Name</b>	<b>Database Administration</b>	<b>Course Code</b>	<b>PRG 379</b>
<b>Prerequisites</b>		<b>Credit Hours (L,W,T)</b>	<b>2 (0, 4, 0)</b>

Course description :

This course prepares trainees to perform the day-to-day administration of a database system. The focus of this course is on Oracle database administration. Trainees will focus on the following: installing database management software and utilities, controlling access to data and resources, troubleshooting an Oracle database, the backup and recovery of Oracle databases, and resolving common performance problems.

Topics :

- 1- Database Architecture .
- 2- Database Management.
- 3- Administering User Security.
- 4- Performance Management.
- 5- Backup and Recovery.

References :

- Oracle Database 11g: Administration Workshop I at: <http://education.oracle.com/>
- Bob Bryla, Oracle Database 11g DBA Handbook, Oracle Press.
- Oracle® Database Administrator's Guide [http://docs.oracle.com/cd/E11882\\_01/index.htm](http://docs.oracle.com/cd/E11882_01/index.htm).



Detailed of practicals Contents			
	Contents	Week no.	Hours
1	<ul style="list-style-type: none"> <li>• Introduction to Database Administration and DBA Tasks.</li> <li>• Oracle Database Architecture .</li> <li>• Installing your Oracle Software .</li> <li>• Creating an Oracle Database.</li> </ul>	1, 2	8
2	<ul style="list-style-type: none"> <li>• Managing the Oracle Database Instance</li> <li>• Manage the ASM Instance</li> <li>• Managing Database Storage Structures</li> </ul>	3,4	8
3	<ul style="list-style-type: none"> <li>• Administering User Security</li> </ul>	5	4
4	<ul style="list-style-type: none"> <li>• Managing Data Concurrency</li> </ul>	6	4
5	<ul style="list-style-type: none"> <li>• Managing Undo Data</li> </ul>	7	4
6	<ul style="list-style-type: none"> <li>• Implementing Oracle Database Auditing</li> </ul>	8	4
7	<ul style="list-style-type: none"> <li>• Database Maintenance</li> </ul>	9	4
8	<ul style="list-style-type: none"> <li>• Performance Management</li> </ul>	10	4
9	<ul style="list-style-type: none"> <li>• Backup and Recovery Concepts</li> <li>• Performing Database Backups</li> <li>• Performing Database Recovery</li> </ul>	11,12	8
10	<ul style="list-style-type: none"> <li>• Moving Data</li> </ul>	13	4
<b>Textbook:</b>		<ul style="list-style-type: none"> <li>• Oracle Database 11g: Administration Workshop I at: <a href="http://education.oracle.com/">http://education.oracle.com/</a></li> <li>• Bob Bryla, Oracle Database 11g DBA Handbook, Oracle Press.</li> </ul>	



<b>Department</b>	<b>Computer Technology</b>	<b>Major</b>	<b>Programming</b>
<b>Course Name</b>	<b>Web Technologies</b>	<b>Course Code</b>	<b>PRG 375</b>
<b>Prerequisites</b>		<b>Credit Hours (L, W, T)</b>	<b>3 (2, 2, 0)</b>

Course description :

This course is designed to offer an overview of the modern Web technologies used for the Web development. The purpose of this course is to give students the basic understanding of how things work in the Web world from the technology point of view as well as to give the basic overview of the different technologies that can be used to develop Web-based Applications.

Topics :

- Basic design and implementation of websites
- Discussion of different navigation and organizational strategies
- Client-side technologies including HTML5, CSS, JavaScript, JSON, and JQuery
- Server-side technologies emphasizing implementations in PHP
- XML & Web Services
- Web Design
- Web Security

Experiments : if applicable it will support the theoretical topics.

References :

- *Web Programming Step by Step*, by J. Miller, V. Kirst, Marty Stepp
- *PHP and MySQL for Dynamic Web Sites: Visual QuickPro Guide*, by Larry Ullman
- *Internet and World Wide Web How to Program*, by H. M. Deitel, P. J. Deitel, and A. B. Goldberg
- <http://www.w3.org/>
- *Practical Web Technologies*, by P.K. Yuen and V. Lau
- *Web Services: Principles and Technology*, by Michael P. Papazoglou



Detailed of Theoretical Contents			
	Contents	Week no.	Hours
1	Introduction to internet concepts and WWW HTML CSS	1,2	2
3	JavaScript JSON	3	2
4	JQuery AJAX	4	2
5	PHP MySQL	5,6,7	2
6	XML	8	2
7	Web Services	9	2
8	Cookies and Sessions	10	2
9	Web Security	11	2
10	Web Design <ul style="list-style-type: none"> <li>• User-centered design</li> <li>• Page layout</li> <li>• Accessibility</li> </ul>	12, 13	2
<b>Textbook:</b>		<i>Web Programming Step by Step</i> , by J. Miller, V. Kirst, Marty Stepp	



<b>Detailed of practicals Contents</b>			
	<b>Contents</b>	<b>Week no.</b>	<b>Hours</b>
<b>1</b>	Basic HTML <ul style="list-style-type: none"> <li>• Page Structure</li> <li>• Elements</li> <li>• Lists</li> <li>• Tables</li> <li>• Meta Data</li> <li>• W3C validator</li> </ul>	<b>1</b>	<b>2</b>
<b>2</b>	CSS <ul style="list-style-type: none"> <li>• CSS syntax</li> <li>• Properties</li> <li>• Style inheritance</li> <li>• classes</li> </ul>	<b>2</b>	<b>2</b>
<b>3</b>	Javascript <ul style="list-style-type: none"> <li>• Client-side scripting</li> <li>• Event-Driven programming</li> <li>• DOM</li> <li>• Javascript Syntax</li> <li>• Program Logic</li> </ul>	<b>3</b>	<b>2</b>
<b>4</b>	JSON <ul style="list-style-type: none"> <li>• JavaScript Object Literals</li> <li>• JSON Data Format</li> <li>• Processing JSON Data</li> </ul>	<b>4</b>	<b>2</b>
<b>5</b>	JQuery <ul style="list-style-type: none"> <li>• Syntax</li> <li>• Selectors</li> <li>• Events</li> </ul>	<b>5</b>	<b>2</b>
<b>6</b>	AJAX <ul style="list-style-type: none"> <li>• Using XMLHttpRequest</li> <li>• Synchronous Requests</li> <li>• Checking for Ajax Errors</li> <li>• Asynchronous Requests</li> </ul>	<b>6</b>	<b>2</b>
<b>7</b>	PHP <ul style="list-style-type: none"> <li>• PHP basic syntax</li> <li>• Embedded PHP</li> <li>• Functions</li> <li>• Arrays</li> <li>• Foreach loop</li> <li>• Classes and Objects</li> </ul>	<b>7</b>	<b>2</b>
<b>8</b>	MySQL	<b>8</b>	<b>2</b>





	<ul style="list-style-type: none"> <li>• Database basics</li> <li>• Connecting to MySQL</li> <li>• Select statment</li> <li>• Querying a Database in PHP</li> </ul>		
<b>9</b>	<p>XML</p> <ul style="list-style-type: none"> <li>• What is XML?</li> <li>• XML Document Structure, Schemas, and DTDs</li> <li>• Processing XML Data</li> </ul>	<b>9</b>	<b>2</b>
<b>10</b>	<p>Web Services</p> <ul style="list-style-type: none"> <li>• WSDL</li> <li>• SOAP</li> <li>• RDF</li> </ul>	<b>10</b>	<b>2</b>
<b>11</b>	<p>Cookies and Sessions</p> <ul style="list-style-type: none"> <li>• Cookies in Javasecript</li> <li>• Cookies in PHP</li> <li>• Sessions in PHP</li> </ul>	<b>11</b>	<b>2</b>
<b>12</b>	<p>Web Security</p> <ul style="list-style-type: none"> <li>• XSS attack</li> <li>• Regular expressions</li> <li>• SQL Injection</li> <li>• Session Hijacking</li> </ul>	<b>12, 13</b>	<b>2</b>
<b>Textbook:</b>		<i>Web Programming Step by Step, by J. Miller, V. Kirst, Marty Stepp</i>	



<b>Department</b>	<b>Computer Department</b>	<b>Major</b>	<b>Programming</b>
<b>Course Name</b>	<b>Software engineering</b>	<b>Course Code</b>	<b>PRG 476</b>
<b>Prerequisites</b>	<b>PRG 345</b>	<b>Credit Hours (L,W,T)</b>	<b>3(2, 2, 0)</b>

**Course description :**

This course is aimed at helping students build up an understanding of how to develop a software system from scratch by guiding them thru the development process and giving them the fundamental principles of system development with object oriented technology using UML. The course will initiate students to the different software process models, project management, software requirements engineering process, systems analysis and design as a problem-solving activity, key elements of analysis and design, and the place of the analysis and design phases within the system development life cycle.

**Topics :**

- Software Processes.
- Agile Software Development .
- Requirements Engineering.
- Architectural Design.
- Design & Implementation .
- Software Testing and evaluation .
- Project management.
- Security.

Experiments : if applicable it will support the theroticals topics.

**References :**

- *SOFTWARE ENGINEERING*, 9th Ed., by Ian Sommerville, Addison-Wesley.
- Eric J. Braude, Michael E. Bernstein, “software engineering : Modern approaches” 2/e, wiley 2011.



<b>Detailed of Theoretical Contents</b>			
	<b>Contents</b>	<b>Week no.</b>	<b>Hours</b>
<b>1</b>	<b>Introduction</b> <ul style="list-style-type: none"> <li>• Professional software development.</li> <li>• Software engineering ethics.</li> <li>• Case studies.</li> </ul>	<b>1</b>	<b>4</b>
<b>2</b>	<b>Software Processes</b> <ul style="list-style-type: none"> <li>• Software process models.</li> <li>• Process activities.</li> <li>• Coping with change.</li> <li>• The rational unified process.</li> </ul>	<b>2</b>	<b>4</b>
<b>3</b>	<b>Agile Software Development</b> <ul style="list-style-type: none"> <li>• Agile methods.</li> <li>• Plan-driven and agile development.</li> <li>• Extreme programming.</li> <li>• Agile project management.</li> <li>• Scaling agile methods.</li> </ul>	<b>3</b>	<b>4</b>
<b>4</b>	<b>Requirements Engineering</b> <ul style="list-style-type: none"> <li>• Functional and non-functional requirements.</li> <li>• The software requirements document.</li> <li>• Requirements specification.</li> <li>• Requirements engineering processes.</li> <li>• Requirements elicitation and analysis.</li> <li>• Requirements validation.</li> <li>• Requirements management.</li> </ul>	<b>4</b>	<b>4</b>
<b>5</b>	<b>System modeling</b> <ul style="list-style-type: none"> <li>• Context models.</li> <li>• Interaction models.</li> <li>• Structural models.</li> <li>• Behavioral models.</li> <li>• Model-driven engineering.</li> </ul>	<b>5</b>	<b>4</b>
<b>6</b>	<b>Architectural Design</b> <ul style="list-style-type: none"> <li>• Architectural design decisions.</li> <li>• Architectural views.</li> <li>• Architectural patterns.</li> </ul>	<b>6</b>	<b>4</b>



	<ul style="list-style-type: none"> <li>• Application architectures.</li> </ul>		
7	<b>Design &amp; Implementation</b> <ul style="list-style-type: none"> <li>• Object-oriented design using the UML.</li> <li>• Design patterns.8</li> <li>• Implementation is9sues.</li> <li>• Open source development.</li> </ul>	7	4
8	<b>Software Testing</b> <ul style="list-style-type: none"> <li>• Development testing.</li> <li>• Test-driven development.</li> <li>• Release testing.</li> <li>• User testing.</li> </ul>	8	4
9	<b>Software Evolution</b> <ul style="list-style-type: none"> <li>• Evolution processes.</li> <li>• Program evolution dynamics.</li> <li>• Software maintenance.</li> <li>• Legacy system management.</li> </ul>	9	4
10	<b>Dependability and Security</b> <ul style="list-style-type: none"> <li>• Dependability properties.</li> <li>• Availability and reliability.</li> <li>• Safety.</li> <li>• Security.</li> </ul>	10	4
11	<b>Embedded software</b> <ul style="list-style-type: none"> <li>• Embedded systems design.</li> <li>• Architectural patterns.</li> <li>• Timing analysis.</li> <li>• Real-time operating systems.</li> </ul>	11	4
12	<b>Project management</b> <ul style="list-style-type: none"> <li>• Risk management.</li> <li>• Managing people.</li> <li>• Teamwork.</li> </ul>	12	4
13	<b>Project planning</b> <ul style="list-style-type: none"> <li>• Software pricing.</li> <li>• Plan-driven development.</li> <li>• Project scheduling.</li> <li>• Agile planning.</li> <li>• Estimation techniques.</li> </ul>	13	4
<b>Textbook:</b>	<b><i>SOFTWARE ENGINEERING, 9th Ed., by Ian Sommerville, Addison-Wesley.</i></b>		



