



**Spring Term**

**Basic Information:**

<b>Title:</b>	Web Engineering	<b>Code:</b>	IT 663
<b>Program:</b>	MBIT via BBIT	<b>Credit Hours:</b>	Three (03)
<b>Sessions:</b>	30 Classes + Mid Term + Final Term	<b>Pre-Requisite:</b>	

**Course Description:**

*This course is an introduction to Internet Programming and web application development. Subject covered include basic web page development and an introduction to dynamic web page development using client-side and server-side scripting and database connectivity.*

**Learning Outcomes:**

*After the completion of this course, it is expected that students who will involve themselves in the knowledge base working of the course will be capable to*

- 1. Detail Knowledge of Web Application Development.*
- 2. Demonstrate knowledge of objects that interacts with server-based programs.*
- 3. Implementation of N Tier Architecture.*
- 4. Be familiar with Modern Web Technologies and Frameworks.*

**Teaching Learning Methodology:**

*The formal teaching component of this course consists of active student participation in and contribution to all forms of teaching and learning i.e. lectures, discussions, research assignments and projects. Lectures will be twice a week of 90 min each.*

**Group Configurations:**

*One of the objectives of this course is to encourage and facilitate teamwork. Class will have to make a group of four for projects and research assignments. It is recommended that student will form their own groups. As a general guideline, your group should have members with diverse skill sets including people who are proficient or have aptitude for different subject areas.*

**Weekly Term Plan**

<b>Wk</b>	<b>Lecture Topic</b>
01	<i>Introduction to Internet, WWW</i>
02	<i>Introduction to Web Engineering</i>
03	<i>Latest Technologies and Tools</i>
04	<i>Introduction to SQL Database</i>
05	<i>SEO</i>
06	<i>N-Tier Architecture</i>
07	<i>Introduction to SOAP services</i>
08	<i>Mid Term Examination</i>
09	<i>Introduction to DevOps</i>
10	<i>Introduction to Micro services</i>
11	<i>Website domain and web hosting</i>
12	<i>Introduction to frameworks</i>
13	<i>Frameworks case study</i>
14	<i>Web Security</i>
15	<i>Presentations</i>
16	<i>Final Term Examination</i>



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**Topics in Detail**

**Introduction to Web Engineering**

*Internet protocols, http, ftp, url, web browsers etc.*

*Client –Server Environment*

*Cookies, Sessions, Web Protocols etc.*

**Bootstrap** – UI framework

**Programming Languages & Frameworks**

*Introduction to Framework*

**Node.js**

– a server-side JavaScript framework

**Angular.js**

– a front-end JavaScript framework.

**Python – Django**

– a full-stack framework built using python

**Ruby on Rails**

– a full-stack framework built using ruby

**.NET**

– a full-stack framework built by Microsoft

**Objective-C**

– the programming language behind iOS by Apple

**Java**

– Used by Android (Google) and a lot of desktop applications.

**Modern Development Work**

*Progressive Web Apps*

*Artificial Intelligence and Chatbots*

*Accelerated Mobile Pages*

*Voice Search Optimization*

**Introduction to SQL Database**

**MongoDB** – open-sourced NoSQL Meteor database.

**PostgreSQL** – open-sourced SQL database.

**MySQL** – open-sourced SQL database.

**Oracle** – is an enterprise SQL database.

**SQL Injection, Dependency Injection**

**SEO**

*SEO Techniques in Websites*

*Digital Marketing, Social Media Marketing*

*Blockchain*

**N-Tier Architecture**

*N-Tier Architecture*

**Introduction to SOAP services**

*Introduction to Web services*

*Introduction to XML*

*SOAP services architecture*

*Responsive web*

**Introduction to DevOps**

*Web Software Integration*

*GIThub*

*Dockers*

**Introduction to Micro Services**

*Implementation of Micro Services in Large Scale*

*Web Apps*

**Web Domain and Hosting**

*Overview of domain name*

*Hosting plans and selection*

*Client server and cloud hosting*

**Web Security**

*Web Security Protocols*

**IPsec** - Internet Protocol Security

**IKE** - Internet Key Exchange

**SSH** - Secure Shell

**SSL** - Secure Socket Layer

**HTTPS** - Secure Embedded Web Server

**RADIUS** - Remote Authentication Dial In User Service

**Text & Recommended Readings**

1. Complete Reference HTML and CSS
2. Java 2 Complete reference

**Assignment Specification**

1. Microsoft Word for Documentation  
*Headings Arial 11pt Bold*  
*Normal Text Times New Roman 10pt*  
*Header Footer Times New Roman 8pt*  
*Paragraph Single Line Spacing*  
*First Line Indent 1.0 cm*  
*Page Margins 2 cm from each side*



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**Grading Policy:**

*Final Grade for this course will be the cumulated result of the following term work with relevant participation according to the quoted percentage.*

<b>Sessional</b>	<b>25%</b>		<b>MidTerm</b>	<b>35%</b>		<b>Final Term</b>	<b>40%</b>
Assignments	10 %		Mid Term Exam	25%		Final Exam	30%
Quizzes	10%		Major Report/Work	10%		Case Study/Project/ Term Paper	10%
Presentations	05%						

*Remember subdivision of Mid Term and Final Term Examination should be done only in extreme cases of very essential and major Grading Instruments.*

**Dishonest Practices & Plagiarism**

*Any student found responsible for dishonest practice/cheating (e.g. copying the work of others, use of unauthorized material in Grading Instruments) in relation to any piece of Grading Instrument will face penalties like deduction of marks, grade 'F' in the course, or in extreme cases, suspension and rustication from IBIT.*

*For details consult PU Plagiarism Policy at <http://pu.edu.pk/dpcc/downloads/Plagiarism-Policy.pdf>*

**Grading System:**

Letter Grade	Grade Point	Num Equivalence
A	4.00	85 – 100 %
A-	3.70	80 – 84 %
B+	3.30	75 – 79%
B	3.00	70 – 74 %
B-	2.70	65 – 69 %
C+	2.30	61 – 64 %
C	2.00	58 – 60 %
C-	1.70	55 – 57 %
D	1.00	50 – 54 %
F	0.00	Below 50 %
I	Incomplete	*
W	Withdraw	*

**Norms to Course:**

- ✓ Submission Date and Time for the term instruments is always Un-Extendable
- ✓ 5 Absentees in class will be result in forced withdrawal. (PU Policy)
- ✓ Re-sit in Mid and Final Term will cause you a loss of 2 and 3 grade marks respectively. (PU Policy)
- ✓ This is your responsibility to keep track of your position in class evaluation units.
- ✓ After the submission date, NO excuse will be entertained.
- ✓ Keep a copy of all submitted Grading Instruments.
- ✓ Assignment is acceptable only in its Entirety.
- ✓ No make up for any assignment and quiz.
- ✓ Copied & Shared work will score Zero.
- ✓ Assignments are Individual.

**Good Luck**  
 For the Spring Term