5 Years Integrated M.C.A.

DSE6 Fundamentals Web Application Development (060060508)

5th Semester

EFFECTIVE FROM JUNE - 2017

VERSION-1.0
# Course Title: DSE6 Fundamentals of Web Application Development

<table>
<thead>
<tr>
<th>Course Code: 060060508</th>
<th>Course Title: DSE6 Fundamentals of Web Application Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Credits: 4</td>
<td>[Lectures: 04, Tutorial: 00, Practical: 04]</td>
</tr>
<tr>
<td>Prerequisites:</td>
<td>Programming Fundamentals, HTML and Web programming</td>
</tr>
<tr>
<td>Objectives:</td>
<td>To provide basic understanding of framework and in-depth knowledge of developing dynamic and rich Web application in conjunction with event handling, state management, data accessing and providing security.</td>
</tr>
</tbody>
</table>

## 1 Basics of Framework [20 %]
- 1.1. Introduction of Framework
- 1.2. Building block of framework architecture
- 1.3. Web Form Fundamentals
- 1.4. Common Web Controls
- 1.5. Web Control Events
- 1.6. Error Handling, Logging and Tracing
- 1.7. State Management: Server side, Client side
- 1.8. Web application configuration

## 2 Building Web Forms [15%]
- 2.1. Validation Controls
- 2.2. Rich Web Controls
- 2.3. User Control
- 2.4. Dynamic Graphics and Chart
- 2.5. Styles: Creating and applying CSS
- 2.6. Themes: Applying theme and skin
- 2.7. Master Page and Advanced Master Pages
- 2.8. Website Navigation Controls

## 3 Working with Data [15 %]
- 3.1. Introduction to data architecture
- 3.2. Data Provider Model: Using Direct Data Access, Connection object, Command object, Using Disconnected Data Access
- 3.3. Data Binding: Introduction, Single Value Binding, Repeated-Value Data Binding
- 3.4. Working with Data Source Control
- 3.5. Data Controls
- 3.6. Report generation

## 4 Working with other Data [20 %]
- 4.1. Files and Streams: Reading and Writing with Streams, Allowing File Uploads
- 4.2. Caching: Understanding Caching, Output Caching, Data Caching
- 4.3. LINQ: Basics, Expressions, Providers – LINQ to SQL, LINQ to Dataset, LINQ to Object
- 4.4. Entity Framework

## 5 Website Security [15 %]
- 5.1. Form Authentication
- 5.2. Membership Data Source
- 5.3. The Security Controls
- 5.4. Role-Based Security
- 5.5. Profiles

## 6 Advanced Features [15 %]
6.1. Introduction of AJAX
6.2. Overview of jQuery: Syntax, Effect, Validation
6.3. Sending Email from Web Applications
6.4. Introduction of Web services

The tool/platform/technology as an exposure to the concepts' implementation/demonstration, shall be determined by the course teacher(s) with due approval of Director and/or IQAC.

Course Outcomes: Upon completion of the course, students shall be able to

CO1: Determine usage of web application framework.
CO2: Create Web pages, handles events and manipulate content.
CO3: Build Web applications using state management and applicable type of options.
CO4: Access data by using built-in SQL Server and generate dynamic reports.
CO5: Conveniently extract and process data using file stream, and also able to develop the application with concept of caching, LINQ and entity framework.
CO6: Design and develop secure Web application.
CO7: Use advanced features like AJAX and jQuery.

Course Objective and Course Outcomes Mapping:

Understanding of Framework: CO1
Developing dynamic and rich web application: CO3, CO4, CO6, CO7
In depth knowledge of Event handling and state management: CO2, CO3
In depth knowledge of data access : CO4, CO5
Providing security using membership and profiles: CO7

Course Units and Course Outcomes Mapping:

<table>
<thead>
<tr>
<th>Unit No.</th>
<th>Unit</th>
<th>CO1</th>
<th>CO2</th>
<th>CO3</th>
<th>CO4</th>
<th>CO5</th>
<th>CO6</th>
<th>CO7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Basics of Framework</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2</td>
<td>Building Web Forms</td>
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<tr>
<td>3</td>
<td>Working with Data</td>
<td></td>
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<tr>
<td>4</td>
<td>Working with other Data</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
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<td></td>
<td>✓</td>
</tr>
<tr>
<td>5</td>
<td>Website Security</td>
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<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>6</td>
<td>Advanced Features</td>
<td></td>
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<td>✓</td>
</tr>
</tbody>
</table>

Laboratory(Only if the course is of practical nature):

- A Course Teacher shall prepare a fresh Practical List for each academic year with no repeated problem definitions from previous two consecutive years.
- The Practical List shall consists of "Required number of problems" for journal certification as well as "Practice problems" of varying nature from each unit as per its weightage and criticality.
- Laboratory Supervisor or Course Teacher shall sign in the journal only if he/she is satisfied by the work of student.
Journal shall be verified by the Laboratory Supervisor as well as by the Course Teacher at least thrice in a semester at appropriate interval upon the discretion of the Course Teacher.

Journal must not be certified if required number of problems are not included and not written clearly.

After due approval, the Practical List shall be kept by concern Course Teacher on web site before the commencement of the semester.

Problem list shall contain practical problems from each of the units are as follow:

<table>
<thead>
<tr>
<th>Unit No.</th>
<th>Required no. of problems to get the journal certified</th>
<th>Covering Unit / Sub-Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>All sub-units</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>All sub-units</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>All sub-units</td>
</tr>
<tr>
<td>4</td>
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<tr>
<td>5</td>
<td>2</td>
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</tr>
<tr>
<td>6</td>
<td>2</td>
<td>All sub-units</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
<td></td>
</tr>
</tbody>
</table>

Hands-on Activity

- Hands-on sessions shall be conducted on following topics:
  1. Web application configuration
  2. Dynamic graphics and Chart
  3. Styles and Themes
  4. Master Pages

Modes of Transaction (Delivery):

- **Lecture** method shall be used for all units. For all units lecture delivery shall be supplemented with audio-visual aids.

- Self-Study of following part of the syllabus shall be done by the students:
  .NET Framework
  CSS

Activities/Practicum:

The following activities shall be carried out by the students.

- Student shall have to prepare assignment on list of controls, which are commonly used in various applications.

- Develop Web utility to get exposure to web application development.

The following activities shall be carried out by the course teacher.

- Fetch XML data using LINQ

Text Books:

1. Matthew MacDonald, "Beginning ASP.NET in C#", APress.
Reference Books:
1. ImarSpaanjaars, "Beginning ASP.NET in C# and VB", Wrox.
3. Anne Boehm, Joel Murach, "Murach’s ASP.NET 4 Web Programming with C#2010", SPD.

Concept Map:
It is a hierarchical / tree based representation of all topics covered under the course. This gives direct / indirect relationship /association among topics as well as subtopics.

Unit 1:

Unit 2:
Unit 3:

**Working with Data**

- Data Architecture
- Data Provider Model
- Data Binding
- Data Controls
- Reports
- Working with Data Source Control

Unit 4:
Assessment:
- The weightage of Continuous Internal Evaluation (CIE) and University examination shall be as per the University regulations.
- The course teacher is free to decide the structure of CIE:
  i. Assessment parameters like Open Book test, Quizzes, Unit Tests, Assignments, Internal, Self-Creation and etc.
  ii. Weightage and frequency of each parameter.
- After assessment parameters are approved by Director and/or IQAC, it shall be informed to the students by publishing over web before commencement of the semester.
- The assessment policy document should be uploaded on the web before the commencement of the semester.
- Syllabus for each CIE parameter shall be covered by the date of the corresponding test.
- No make-up work shall be conducted unless approval from Director.

UFM:
- Any ascertained fact of breaking institute policy shall be associated with one or all of the following: (i) zero marks for the work; (ii) report to the programme coordinator; (iii) report to the Director.

Attendance:
- Attendance means being present for the entire class session. Those arriving significant late or leaving significantly early without prior permission shall be counted as ABSENT for the entire class session.
- Concern teacher must clearly state his/her attendance policies at the first class meeting.