Part 1

Syllabus
<table>
<thead>
<tr>
<th>Competency</th>
<th>Competency Level</th>
<th>Content</th>
<th>Time</th>
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</thead>
</table>
| **Competency 10.** Writes programs to solve problems | 10.1 Develops algorithms to solve problems. | • Definition of algorithm.  
• Definition of problems  
  o Inputs  
  o Processes  
  o Outputs  
• Control structures used for developing algorithms  
  o Sequence  
  o Selection  
  o Repetition | 90 minutes |
| | 10.2 Uses different tools to present algorithms. | • Tools for developing algorithms  
  o Flow chart  
  o Pseudo code | 120 minutes |
| | 10.3 Explores the evolution of programming languages | • Generations of Languages  
  o First Generation  
  o Second Generation  
  o Third Generation  
  o Fourth Generation  
• Features of Languages  
• Mechanism (tools) used to convert source code to machine code  
  o Assembler  
  o Interpreters  
  o Compilers | 60 minutes |
| | 10.4 Demonstrates familiarity on the IDE of a selected Visual Programming Language | • Components of Integrated Development Environment (IDE)  
  o Tool Box  
  o Code window  
  o Design window  
  o Project explorer  
  o Properties window  
• Form layout window | 60 minutes |
| | 10.5 Manipulates features of controls | • Selection of controls  
  o Labels  
  o Text Boxes  
  o Command buttons  
• Setting properties  
  o Name  
  o Caption  
  o Background Color  
  o Font Color  
  o Font Type, Style and Size  
  o Alignment | 120 minutes |
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Subtopics</th>
<th>Time</th>
</tr>
</thead>
</table>
| 10.6    | Converts simple algorithms into programs. | - Controls for data Input  
  - Controls for data output  
  - Conversion process | 150 minutes |
| 10.7    | Uses constants and variables in programming. | - Data Types  
  - Variables and constants | 180 minutes |
| 10.8    | Uses operators in programming | - Types of Operators  
  - Operator Precedence | 90 minutes |
| 10.9    | Writes programs with objects and multiple forms | - Calling Methods  
  - Events of control  
  - Scroll Bar  
  - Combo box  
  - Check Box  
  - Option Button | 120 minutes |
<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Time Required</th>
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<tbody>
<tr>
<td>10.10</td>
<td>Develops programs involving Single Condition</td>
<td>60 minutes</td>
</tr>
<tr>
<td></td>
<td>• Selection control structures</td>
<td></td>
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<tr>
<td></td>
<td>o If-Then</td>
<td></td>
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<tr>
<td></td>
<td>o If–Then-Else</td>
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<tr>
<td>10.11</td>
<td>Develops programs involving Multiple Conditions.</td>
<td>120 minutes</td>
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<tr>
<td></td>
<td>• Methods for using multiple conditions</td>
<td></td>
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<tr>
<td></td>
<td>o If –Then-Else-End If</td>
<td></td>
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<tr>
<td></td>
<td>o Select Case</td>
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<tr>
<td>10.12</td>
<td>Develops programs involving basic repetitions.</td>
<td>60 minutes</td>
</tr>
<tr>
<td></td>
<td>• No. of repetitions known</td>
<td></td>
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<tr>
<td></td>
<td>o For-Next loop</td>
<td></td>
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<tr>
<td>10.13</td>
<td>Develops programs with different methods of repetitions</td>
<td>120 minutes</td>
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<tr>
<td></td>
<td>• Repetition with</td>
<td></td>
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<tr>
<td></td>
<td>o Do-While</td>
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<tr>
<td></td>
<td>• Repetition with</td>
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<tr>
<td></td>
<td>o Do-Until</td>
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<tr>
<td>10.14</td>
<td>Develops programs using one dimensional arrays</td>
<td>120 minutes</td>
</tr>
<tr>
<td></td>
<td>• Definition of one dimensional array</td>
<td></td>
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<tr>
<td></td>
<td>• Array Operations</td>
<td></td>
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<tr>
<td></td>
<td>o Declaration</td>
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<tr>
<td></td>
<td>o Accessing values</td>
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<td></td>
<td>o Assignment of values</td>
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<td></td>
<td>o Editing</td>
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<tr>
<td>10.15</td>
<td>Manages programs through sub routines</td>
<td>120 minutes</td>
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<tr>
<td></td>
<td>• Sub Routine Techniques</td>
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<tr>
<td></td>
<td>o Functions</td>
<td></td>
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<tr>
<td></td>
<td>o Procedures</td>
<td></td>
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<td></td>
<td>• Scope of variables</td>
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<tr>
<td></td>
<td>o Private</td>
<td></td>
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<tr>
<td></td>
<td>o Public</td>
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<tr>
<td>10.16</td>
<td>Controls programs using timer object</td>
<td>45 minutes</td>
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<tr>
<td></td>
<td>• Timer object</td>
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<td></td>
<td>o Time Interval property</td>
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<tr>
<td></td>
<td>o Timer event</td>
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<tr>
<td>10.17</td>
<td>Develops programs to retrieve data from databases</td>
<td>180 minutes</td>
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<tr>
<td></td>
<td>• Tools for connecting databases to the application</td>
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<tr>
<td></td>
<td>o Data Environment</td>
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<td></td>
<td>o ADO Control</td>
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<td></td>
<td>• Controls for viewing single record</td>
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<td></td>
<td>o Text Box</td>
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<td></td>
<td>o Label</td>
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<tr>
<td>10.18</td>
<td>Updates records in databases</td>
<td>90 minutes</td>
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<tr>
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<td>• Methods in Data Environment</td>
<td></td>
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<tr>
<td></td>
<td>o Add method</td>
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<td></td>
<td>o Edit method</td>
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<td></td>
<td>o Delete method</td>
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| 10.19 Handles data through Data Grids in Visual Programming | Data Grid Control  
  - For viewing multiple records  
  - For updating multiple records | 90 minutes |
|-------------------------------------------------------------|---------------------------------------------------------------|-----------|
| 10.20 Creates reports to retrieve data in databases.         | Report Tool  
  - For designing report  
  - For previewing report  
  - For printing report | 90 minutes |
<table>
<thead>
<tr>
<th>Competency</th>
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<th>Content</th>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>11: Designs and develops an Information System to manage information in</td>
<td>11.1 Selects suitable systems for automation purposes</td>
<td>• Definition of system</td>
<td>120</td>
</tr>
</tbody>
</table>
| efficient and effective manner                                             |                                                                                                                                                                                                             | • Components of a system  
  o input  
  o process  
  o output  

• Information systems  
  o Importance of Information  
  In decision making  
  o Manual systems  
  o Automated systems  

• Organization as a system  
• Independent elements of a computer based information systems  

• Selecting a system to computerize  
  o Problem definition  
  o User requirements  
  o System boundary  
  o Resource limits  
  o Feasibility study  
  o Technical feasibility  
  o Operational feasibility  
  o Economical feasibility |
| 11.2 Analyses systems, selected for automation                             |                                                                                                                                                                                                             | • Requirements of systems  
• Detailed operations of the system                                                                                                                                                    | 120    |
| 11.3 Designs and develops computerized systems for analyzed manual systems |                                                                                                                                                                                                             | • Interface Design  
• Database Design  
• Selecting a Programming Language  
• Coding                                                                                                                                  | 120    |
| 11.4 Implements and tests for debugging of developed systems | • Testing and debugging the system for errors  
• Implements the new system  
  o Direct Implementation  
  o Parallel Implementation  
  o Phase Implementation | 120 minutes |
| --- | --- | --- |
| 11.5 Maintenance systems for smooth and continuous service | • Operational level error handling  
  o Hardware compatibility  
  o Software compatibility  
  o Incompatible data  
• Make changes to the system when required  
  Adding new user requirements  
  o Expansion of the organization  
  o Availability of New technology | 120 minutes |
<table>
<thead>
<tr>
<th>Competency</th>
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</tr>
</thead>
</table>
| **12. Uses Internet for Effective Information Search and Communication** | 12.1 Uses Internet to access information | • Introduction to Internet  
• Internet Services  
• Web site  
• Web page  
• IP address/Domain name  
• Search engines | 120 minutes |
| | 12.2 Communicates using email | • Email software  
• E-mail address  
• Domain name  
• Creating a free e-mail account  
• Sending and receiving mails | 60 minutes |
| | 12.3 Uses chat to exchange information | • Chat categories  
• Free chat services  
• Video chat/Video Conferencing  
  o Components (Web cam, Headset)  
  o Advantages and concerns | 60 minutes |
<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Competency 13: Develops Multimedia contents to express ideas effectively.</td>
<td>13.1 Creates effective still graphics using suitable graphic software.</td>
<td>120 minutes</td>
<td></td>
</tr>
</tbody>
</table>
|                                  |                  | - Integrated development environment  
  - Tools options bar,  
  - Tool box,  
  - Drawing area,  
  - Pallets  
- Properties of a canvas  
  - Creating  
  - Setting properties  
    - Name  
    - Preset size  
    - Width  
    - Height  
    - Resolution  
    - Mode  
    - Contents  
- Use of toolbox.  
  - Elliptical Marquee Tool  
  - Move Tool  
  - Lasso Tool  
  - Crop Tool  
  - Brush Tool  
  - Clone Stamp Tool  
  - Eraser Tool  
  - Paint Bucket Tool  
  - Horizontal Type Tool  
  - Custom Shape Tool  
  - Setting background and foreground color.  
- Handling layers  
  - Concepts of layers.  
  - Operations of layers.  
    - Display and Hide layers  
    - Setting opacity  
    - Setting fill  
    - Creating  
    - Deleting  
    - Duplication  
    - Setting the order  
    - Setting layer style.  
    - Drop shadow  
    - Inner shadow  
    - Stroke  
- Manipulations of images.  
  - Cut and paste  
  - Copy and paste  
  - Cropping  
  - Feather effect  
  - Cloning |
<table>
<thead>
<tr>
<th>13.2</th>
<th>Creates effective 2D animations using suitable 2D animations software</th>
</tr>
</thead>
</table>
| • File Operations  
  o Opening images  
  o Saving images | • Components of working area  
  o Stage  
 • Layers  
  o Insertion  
  o Deletion  
  o Renaming  
 • Frames  
  o Blank frame  
  o Key frame  
  o Blank key frame  
 • Property inspector  
  o Basic Tools  
  o Arrow Tool  
  o Text Tool  
  o Oval Tool  
  o Rectangle Tool  
  o Eraser Tool  
  o Free Transform Tool  
 • Animation types  
  o Frame-by-Frame  
  o Shape Tweening  
  o Motion Tweening  
 • File operations  
  o Creating  
  o Saving  
  o Opening  
  o Publishing |
| 120 minutes | |

<table>
<thead>
<tr>
<th>13.3</th>
<th>Creates Audio contents using suitable sound editing software</th>
</tr>
</thead>
</table>
| • Handling sound files  
  o Recoding  
  o Saving  
  o Editing  
  ▪ Deletion of part of the file  
  ▪ Mixing of sound files  
 • Addition of special effects  
  o Changing Volume  
  o Changing the speed of play  
  o Addition of echo  
  o Reversing of sound |
| 90 minutes | |

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<thead>
<tr>
<th>13.4</th>
<th>Effectively integrates multimedia contents</th>
</tr>
</thead>
</table>
| • Integration of background images with animations  
 • Integration of sound with animations | 120 minutes |
<table>
<thead>
<tr>
<th>Competency</th>
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<th>Content</th>
<th>Time</th>
</tr>
</thead>
</table>
| Competency 14: Develops simple websites incorporating Multimedia Technology. | 14.1 Structures information for development of websites | - Components of a web site  
  - Home Page  
  - Linked pages  
  - Text organization techniques  
  - Formats  
  - Columns  
  - Lists  
  - Tables  
  - Reasons for integrating multimedia  
  - Reasons for mouse pointer changes  
  - Links  
  - Ethical issues in provision of information  
    - Copyrights  
    - Harmless and moral. | 120 minutes |
|            | 14.2 Develops web sites using web development tools | - Web authoring tools  
  - Text Formatting  
  - Page Layout  
  - Multimedia Integration  
  - Hyperlinks | 120 minutes |
|            | 14.3 Develops simple web sites using HTML | - Feature of HTML  
  - HTML Tags  
    - Text Format  
    - Lists  
    - Tables  
    - Graphics  
    - Hyperlinks  
  - Differences between HTML and XML | 160 minutes |
|            | 14.4 Demonstrates preparedness to publish web sites | - Internet Service Providers for Web Publishing  
  - Fee levying  
  - Non Fee Levying  
  - Requirements for Web Publishing  
    - Web server  
    - Domain names  
    - Internet Protocol  
    - URLs | 120 minutes |
<table>
<thead>
<tr>
<th>Competency</th>
<th>Competency level</th>
<th>Content</th>
<th>Time</th>
</tr>
</thead>
</table>
| 15.1. Investigates the contribution of ICT to the health services | • ICT in Health services  
  o Tele Medicine  
  o Tele monitoring  
  o Tele videoconferencing  
  • Computer controlled medical equipment  
  o Computer Axial Tomography (CAT) scanner  
  o Magnetic Resource Image (MRI)  
  o Electroencephalograph (EEG)  
  • Maintenance of medical history records.  
  o Diagnosis  
  o Medication  
  o Test reports | 45 minutes |
| 15.2. Investigates the contribution of ICT to education | • ICT in Education  
  • Learning and teaching  
  o Computer Assisted Learning (CAL)  
  o eLearning  
  • Learning Management System  
  • School Management Information System | 45 minutes |
| 15.3. Investigates the contribution of ICT to agriculture | • ICT in Agriculture  
  • Computer controlled agricultural equipment  
  o Green house  
  • Information searching on agriculture  
  • Virtual competitive market for agricultural products  
  • Optimization of agricultural productivity  
  o Detection and control of pests  
  o Optimization of fertilizer use  
  o Weather prediction | 45 minutes |
| 15.4. Investigates the contribution of ICT to industries | • ICT in Industries  
• Computer Aided Design (CAD) and Computer Aided Manufacture (CAM)  
• Robotics  
• Computerized machines in production | 45 minutes |
|---|---|---|
| 15.5. Explores the contribution of ICT to Business | • On line shopping  
• On line Share market transactions  
• Advertising | 45 minutes |
| 15.6 Explores the contribution of ICT to Entertainment | • Movies and songs  
• Games  
• Simulations | 45 minutes |
| 15.7. Assesses issues related to ICT with respect to ethical and legal aspects | • Legal Issues  
• Software Piracy  
• Software theft  
• Unauthorized access to systems  
• Copyright  
• Patent  
• Ethical issues | 45 minutes |
| 15.8. Explores issues and precautions related to ICT with respect to security aspects | • Physical Security  
• UPS  
• Surge protectors  
• lightening arrestors  
• Environmental factors  
• Dust  
• Humidity  
• Temperature  
• Logical Security  
• Passwords  
• Backups  
• Protection against malicious codes  
• Viruses  
• Worms  
• Trojan Horse  
• Spy ware  
• Blended Threat  
• Firewall | 90 minutes |
| 15.9. Investigates health and safety issues inherent in ICT use | • Health and safety Issues  
• Ergonomics and Health issues  
  o Repetitive Strain Injuries  
  o Eye strain  
  o Back aches | 60 minutes |
|---------------------------------------------------------------|---------------------------------------------------------------|----------------|
| 15.10. Assesses Social issues inherent in ICT use             | • Social Issues  
  o Digital divide  
  o Digital bridge  
  o Techno-rich employment Opportunities | 45 minutes |