

Course Title: Introduction to Information Technology  
 Course No. : ICT Ed 411  
 Level: B.Ed.  
 Semester: First

Nature of Course: Theoretical + Practical  
 Credit Hours: 3 (2T+1P)  
 Teaching Hours: 80 (32T+48P)

### 1. Course Description

This course aims to provide the students with the foundation knowledge of contemporary Information Technology areas, software, applications and job skills required to enter the IT market. It covers a broad range of introduction of Information Technology concepts, operating system, and office automation tools such as word processor, spreadsheet, database and presentation. It also covers the telecommunication and computer network, internet, email, web and ethical issues in information technology.

### 2. Course Objectives

Following are the general objective of this course:

- To familiarize the students with computer and its applications in the relevant fields
- To enhance the skill of students in Information Communication and Technology (ICT) uses and operating system
- To make the students competent in office automation system application.
- To enable the students to use Internet and www
- To make the students knowledgeable about telecommunication industries.
- To make the students able to use computer system in a safe and secure way

### 3. Specific Objectives and Contents

Specific Objectives	Contents
<ul style="list-style-type: none"> <li>• State scope and importance of IT</li> <li>• Differentiate a system from computer system in terms of characteristics, capabilities and limitations</li> <li>• Identify the types of computers and memory devices used in different generation</li> <li>• Illustrate configurations and specifications of PCs</li> <li>• State computer system architecture</li> <li>• Identify basic components of a computer system</li> <li>• Distinguish between primary and secondary memories along the dimension of speed, cost and capacity.</li> </ul>	<p><b>Unit 1 : Fundamentals of Computer (12)</b></p> <p>1.1 Scope of IT and its importance</p> <p>1.2 Computer system concepts, characteristics, capabilities and limitations</p> <p>1.3 Generations of computers</p> <p>1.4 Types of computers</p> <p>1.5 Personal computer (PCs)</p> <p style="padding-left: 20px;">1.5.1 Configurations of PCs</p> <p style="padding-left: 20px;">1.5.2 PCs specifications.</p> <p>1.6 Computer system architecture</p> <p>1.7 Basic components of a computer system</p> <p style="padding-left: 20px;">1.7.1 Input devices</p> <p style="padding-left: 20px;">1.7.2 Output devices</p> <p style="padding-left: 20px;">1.7.3 CPU and its components</p> <p style="padding-left: 20px;">1.7.4 Memory: RAM, ROM, EPROM, PROM</p> <p style="padding-left: 20px;">1.7.5 Secondary storage device</p> <p><b>Lab Work</b></p> <ul style="list-style-type: none"> <li>• Demonstration of PC components</li> <li>• Prepared specification of PC system</li> </ul>
<ul style="list-style-type: none"> <li>• Explain concept of software along with its need</li> <li>• Differentiate main categories of computer software.</li> </ul>	<p><b>Unit 2 : Computer Software and Classification (8)</b></p> <p>2.1 Software and its need</p> <p>2.2 Types of software</p> <p style="padding-left: 20px;">2.3.1 System Software</p> <ul style="list-style-type: none"> <li>• System, Utility Program</li> </ul>

<ul style="list-style-type: none"> <li>• Explore the importance of programming languages in software development.</li> <li>• Analyze the trends of new software and mobile computing.</li> <li>• List all the major operating system</li> <li>• Illustrate file allocation table</li> <li>• Describe window operating system</li> <li>• Perform the window based operating system</li> </ul>	<ul style="list-style-type: none"> <li>• Programming languages</li> <li>• Assemblers</li> <li>• Compilers</li> <li>• Interpreter</li> </ul> <p>2.3.2 Application Software</p> <p>2.3 Programming languages machine, assembly, high Level, 4GL</p> <p>2.4 Trends in software</p> <p>2.5 Introduction to Disk Operating System: internal and external commands</p> <p>2.6 File Allocation Table (FAT &amp; FAT 32)</p> <p>2.7 Introduction to Window Operating System</p> <p>2.7.1 GUI environments</p> <p>2.7.2 Working with Files &amp; Folders</p> <p>2.7.3 Working with windows application programs</p> <p>2.7.4 Customizing the taskbar and desktops</p> <p>2.7.5 Customizing windows</p> <p>2.7.6 Use of accessories.</p> <p>2.7.7 Working with control panel</p> <p>2.8 Mobile Computing</p> <p><b>Lab work</b></p> <ul style="list-style-type: none"> <li>• Performing 2.7 activities using window based operating system</li> <li>• Demonstration of the mobile operating system</li> </ul>
<ul style="list-style-type: none"> <li>• Execute word processor by identifying basic word processing tools</li> <li>• Identify special features commonly found in modern word processor such as editing, formatting, mail merging etc.</li> <li>• Execute some financial tools such as spreadsheet.</li> <li>• Differentiate the terms worksheet and spreadsheet.</li> <li>• List the types of data analysis tools commonly found in spreadsheet and describe their uses.</li> <li>• Execute presentation program.</li> <li>• Create and format slides.</li> <li>• Design and animate the slide</li> </ul>	<p><b>Unit 3: Office Automation Software (20)</b></p> <p><b>3.1 Word processor</b></p> <p>3.1.1 Characteristics of word processor</p> <p>3.1.2 Creating and formatting documents</p> <p>3.1.3 Managing page numbers, header and footer</p> <p>3.1.4 Proofing a document</p> <p>3.1.5 Inserting citation in APA and table of contents</p> <p>3.1.6 Inserting objects from other applications</p> <p>3.1.7 Mail merge</p> <p>3.1.8 Printing documents</p> <p><b>3.2 Spreadsheet Application</b></p> <p>3.2.1 Characteristics of Spreadsheet</p> <p>3.2.2 Creating, formatting and printing worksheets.</p> <p>3.2.3 Financial and statistical Functions in Excel</p> <p>3.2.4 Creating, formatting and printing graphs</p> <p><b>3.3 Presentation Application</b></p> <p>3.3.1 Characteristics of presentation</p> <p>3.3.2 Creating and save presentations</p> <p>3.3.3 Applying template</p> <p>3.3.4 Design slides.</p> <p>3.3.5 Animation on slide</p> <p>3.3.6 Inserting hyperlink, slide number, date and time</p> <p>3.3.7 Slide Transactions</p> <p>3.3.8 Master Slides</p> <p>3.3.9 Slides printing</p> <p><b>Lab Work</b></p> <ul style="list-style-type: none"> <li>• Performing the word processing activities using office</li> </ul>

	<p>automation software like MS Word</p> <ul style="list-style-type: none"> <li>• Performing the spread sheet activities using Office automation software like MS Excel</li> <li>• Performing the presentation activities using Office automation software like MS Power Point</li> </ul>
<ul style="list-style-type: none"> <li>• Clarify number system in computing.</li> <li>• Give examples to illustrate number system and conversion</li> <li>• Calculate in binary</li> </ul>	<p><b>Unit 4: Number System and Their Conversion (4)</b></p> <p>4.1 Introduction of Number System</p> <p>4.2 Decimal, Binary, Octal, Hexadecimal Number System and Conversion</p> <p>4.2 Calculation in Binary – addition, subtraction</p>
<ul style="list-style-type: none"> <li>• Describe computer network and its types</li> <li>• Identify topologies commonly used in networks.</li> <li>• Describe communication channels and types of network connections</li> <li>• Illustrate different network components.</li> <li>• Explain the importance of telecommunication systems in Nepal</li> <li>• State internet services and convergence of technologies.</li> </ul>	<p><b>UNIT 5: Telecommunication and Computer Network (8)</b></p> <p>5.1 Introduction of computer network</p> <p>5.2 Types of network - LAN, WAN, MAN</p> <p>5.3 Topologies of LAN - Ring, Bus, Star, Mesh and Tree topologies</p> <p>5.4 Communication Channels - Twisted, Coaxial, and Fiber Optic</p> <p>5.5 Components of LAN - Media, NIC, Bridges, HUB, Routers, Repeater and Gateways.</p> <p>5.6 Introduction to telecommunication.</p> <p>5.7 Telecommunication systems in Nepal.</p> <p>5.8 Internet services and convergence of technologies.</p>
<ul style="list-style-type: none"> <li>• Explain database and its types</li> <li>• Illustrate database management system and its applications</li> <li>• List out the DBMS software</li> <li>• Create a data base with table, relationships, queries, form, report and macro.</li> </ul>	<p><b>UNIT 6 : Database Management System (14)</b></p> <p>6.1 Introduction to database</p> <p>6.2 Types of database</p> <p>6.3 Database Management System (DBMS)</p> <p>6.4 Application of DBMS</p> <p><b>Lab Work</b></p> <ul style="list-style-type: none"> <li>• Creating database using DBMS software like MS Access</li> <li>• Creating tables with its properties</li> <li>• Creating relation between two or more tables</li> <li>• Creating form</li> <li>• Creating queries</li> <li>• Creating reports</li> <li>• Creating macro</li> </ul>
<ul style="list-style-type: none"> <li>• Explain evolution of internet and world wide web</li> <li>• Distinguish between internet, intranet and extranet</li> <li>• Demonstrate the use of web technology</li> <li>• Describe social media and e-mail services</li> <li>• Explain cloud, green and virtual computing</li> <li>• State different e-Services</li> <li>• Surf web sites, use search engine, create e-mail and use social media</li> </ul>	<p><b>Unit 7 : Internet Web and Emerging Technology (10)</b></p> <p>7.1 Internet and Its Evolution</p> <p>7.2 World Wide Web</p> <p>7.3 Internet, Intranets and Extranet</p> <p>7.4 Search Engine and Web Browser</p> <p>7.5 Social Media</p> <p>7.6 e-Mail Services</p> <p>7.7 Web 2.0</p> <p>7.8 Cloud Computing</p> <p>7.9 Green Computing</p> <p>7.10 Virtual Computing</p> <p>7.11 e-Services</p> <p>7.11.1 e-Commerce</p> <p>7.11.2 e-learning</p> <p>7.11.3 e-Health</p> <p>7.11.4 e-Government</p>

	<p>7.11.5 e-Library</p> <p><b>Lab work</b></p> <ul style="list-style-type: none"> <li>• Surfing web sites</li> <li>• Using Search engine</li> <li>• Creating Email</li> <li>• Using social media</li> </ul>
<ul style="list-style-type: none"> <li>• Define computer virus and threats</li> <li>• Explain the ways of protecting computer virus</li> <li>• Identify the security and ethical issues in IT.</li> <li>• State computer crime</li> <li>• Define privacy and intellectual property</li> <li>• Install antivirus and scan computer system</li> </ul>	<p><b>UNIT 8 : Security and Ethical Challenges (4)</b></p> <p>8.1 Computer Virus and threats</p> <p>8.2 Protection from computer virus</p> <p>8.3 Security and Ethical issues in Information Technology</p> <p>8.4 Computer crime</p> <p>8.5 Piracy issues and intellectual property</p> <p><b>Lab Work</b></p> <ul style="list-style-type: none"> <li>• Installing antivirus and scan computer system</li> </ul>

*Note: The figures in the parentheses indicate the approximate teaching hours for the respective units.*

#### 4. Instructional Techniques

The instructional techniques for this course are divided into two groups. First group consists of general instructional techniques applicable to most of the units. The second group consists of specific instructional techniques applicable to particular units.

##### 4.1 General Instructional Techniques

Reading materials will be provided to students in each unit. Lecture preferably with the use of multi-media projector, demonstration, practical classes, discussion, and brain storming are used in all units.

##### 4.2 Specific Instructional Techniques

Demonstration is an essential instructional technique for all units in this course during teaching-learning process. Specifically, demonstration with practical works will be specific instructional technique in this course. The details of suggested instructional techniques are presented below:

Units	Activities
Unit 2: For Window Operating System	<ul style="list-style-type: none"> <li>• Demonstration by the teacher on different types of operation system (Working with files &amp; folders, working with windows application programs, customizing the taskbar and desktops, customizing windows, use of accessories and working with control panel)</li> <li>• Individual lab work of those operation system by each student</li> <li>• Monitoring of students' work by reaching each student and providing feedback for improvement</li> <li>• Presentation by students followed by peers' comments and teacher's feedback</li> </ul>
Unit 3: For Word Processing	<ul style="list-style-type: none"> <li>• Demonstration by the teacher on word processing <ul style="list-style-type: none"> <li>- Formatting text</li> <li>- editing document</li> <li>- tab setting,</li> <li>- paragraph alignment</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>- inserting table and objects</li> <li>- managing table of contents, page setup, proof reading the document</li> <li>• Lab work in pairs in a task assigned by the teacher using word processing</li> <li>• Monitoring of students' work by reaching each pair and providing feedback for improvement</li> <li>• Presentation by students followed by peers' comments and teacher's feedback</li> </ul>
<p><b>Unit 3: For Spread Sheet</b></p>	<p><b>Spread Sheet</b></p> <ul style="list-style-type: none"> <li>• Demonstration by the teacher on spread sheet <ul style="list-style-type: none"> <li>- Naming cell and cell range, use of formula and different types of functions</li> <li>- Inserting chart and objects</li> <li>- Renaming worksheet and workbook</li> <li>- Handling cell formatting such as alignment, numbers, currency, font colour, merger and centre</li> <li>- Applying autofill features to customise tasks</li> <li>- Design a bill of supermarket, mark sheet of school and college, mark ledger book, line graph, column chart, pie chart, 3D view chart using title, Axis, Gridlines, Legend, Data level and data table</li> <li>- Develop different types of tables</li> <li>- Use different types of functions, Formulas and subtotals.</li> <li>- Use colours, Font, Currency, Subtotal, Sort, Auto filter, etc.</li> </ul> </li> <li>• Lab work in pairs in different tasks assigned by the teacher</li> <li>• Monitoring of students' work by reaching each pair and providing feedback for improvement</li> <li>• Presentation by students followed by peers' comments and teacher's feedback</li> </ul>
<p><b>Unit 3: For Presentation Package</b></p>	<ul style="list-style-type: none"> <li>• Demonstration by the teacher on presentation package <ul style="list-style-type: none"> <li>- Create different types of presentation slides</li> <li>- Apply a design templates</li> <li>- Use formatting, Alignments, Bullet, Insert picture, Organization charts, Word Art, Diagram Gallery display box, 3-D style, Rotating objected. Create/types of charts and Data sheet. Chart with title, Axis, Gridlines, Legend, Data labels and data table</li> <li>- Insert the different types of custom animation and movie.</li> <li>- Create different type of slides to use in the teaching and learning process</li> </ul> </li> <li>• Individual lab work of those operation system by each student</li> <li>• Monitoring of students' work by reaching each student and providing feedback for improvement</li> <li>• Presentation by students followed by peers' comments and teacher's feedback</li> </ul>
<p><b>Unit 6: For Data Management System</b></p>	<ul style="list-style-type: none"> <li>• Demonstration by the teacher about creating and maintaining the database using MS-Access.</li> <li>• Pair works to design a database using DDL and DML commands for creating Students and staffs profile, Telephone Directory Etc.</li> <li>• Monitoring of students' work by reaching each pair and assist them to complete the assignment</li> </ul>

	<ul style="list-style-type: none"> <li>• Presentation by students followed by peers' comments and teacher's feedback</li> </ul>
<b>Unit 7: For E-Mail</b>	<ul style="list-style-type: none"> <li>• Demonstration by the teacher on <ul style="list-style-type: none"> <li>- creating a mailing list for communicating students or teachers</li> <li>- using e-mail to search to download and to send; to receive, to attach file and to send copies of e-mail documents.</li> </ul> </li> <li>• Individual lab work of those operation system by each student</li> <li>• Monitoring of students' work by reaching each student and providing feedback for improvement</li> <li>• Presentation by students followed by peers' comments and teacher's feedback</li> </ul>
<b>Unit 7: For Internet</b>	<ul style="list-style-type: none"> <li>• Demonstration by the teacher on searching the web site, downloading the file, uploading the files, and creating a block</li> <li>• Individual lab work of those operation system by each student</li> <li>• Monitoring of students' work by reaching each student and providing feedback for improvement</li> <li>• Presentation by students followed by peers' comments and teacher's feedback</li> </ul>

## 5. Evaluation

Evaluation of students' performance is divided into parts: Internal assessment and internal and external practical examination and theoretical examinations. The distribution of points is given below:

Internal Assessment	External Practical Exam/Viva	Semester Examination (Theoretical exam)	Total Points
40 Points	20 Points	40 Points	100 Points

*Note: Students must pass separately in internal assessment, external practical exam and semester examination.*

### 5.1 Internal Assessment (40 Points)

Internal assessment will be conducted by subject teacher based on following criteria:

- |   |           |
|---|-----------|
| 1) Class Attendance   | 5 points  |
| 2) Learning activities and class performance                      | 5 points  |
| 3) First assignment ( written assignment)                         | 10 points |
| 4) Second assignment (Case Study/project work with presentation ) | 10 points |
| 5) Terminal Examination   | 10 Points |

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Total	40 points
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### 5.2 Semester Examination (40 Points)

Examination Division, Dean office will conduct final examination at the end of semester.

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|---|-----------|
| Objective question (Multiple choice questions 10 x 1 point) | 10 Points |
| Short answer questions (6 questions x 5 marks)              | 30 Points |

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Total	40 points
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### 5.3 Practical Exam/Viva (20 Points)

Examination Division, Dean Office will conduct final practical examination at the end of semester. Practical record book, practical written test, demonstration of practical activities and viva are assessment indicators.

## 6. Recommended Books and References materials (including relevant published articles in national and international journals)

### Recommended Books:

Alexis Leon & Mathews Leon (2009). *Fundamentals of Information Technology*, 2/e. New Delhi. Vikas Publishing House (unit 1-5)

Turban, R. R. (2014). *Introduction To Information Technology*. John Wiley and Sons (Asia) Pvt. Ltd. (For unit 6 to unit 8)

### References materials:

Sinha, P. K., & Sinha, P. (2007). *Computer fundamentals: concepts, systems & applications*. New Delhi: BPB Publications.

Norton, P. (2006). *Peter Norton's computing fundamentals*. Boston, Mass: McGraw-Hill Technology Education.

Morley, D. &. (2013). *Understanding Computers Today and Tomorrow*. Cengage Learning.

V. Rajaraman, Neeharika Adabala (2014). *Fundamentals of Computers* 6th Edition. New Delhi:

PHI

Cox, J., Lambert, J., & Frye, C. (2011). *Microsoft Office Professional 2010 step by step*.

Redmond, Wash: Microsoft.

Melton, B. (Ed.). (2013). *Microsoft Office Professional 2013*. Sebastopol, Calif: O'Reilly Media.

Melton, Beth, Dodge, Mark, (2013), *Microsoft Office Home and Student 2013 Step By Step*, PHI India.

Patrice-Anne Rutledge (2014), *Office 2013 All-In-One Absolute Beginner's Guide*

ISBN:9789332539372 , Pearson India