

FACULTY OF ENGINEERING & TECHNOLOGY

SYLLABUS

FOR

ADVANCED DIPLOMA COURSE IN MOBILE COMMUNICATION

(SEMESTER – I & II)

SESSION: 2019–20



GURU NANAK DEV UNIVERSITY, AMRITSAR

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Advanced Diploma Course in Mobile Communication (Semester System)

Course structure:

- (i) **Basic Course:** (6 Months)
(ii) **Diploma:** (6 Months+ 6 Months = 1 Year)
(iii) **Advanced Diploma:** (6 Months+6 Months+1 Year =2 Years)

The Advanced Diploma comprises Sr. No. (i) and (ii) as above and Sr. No.(iii).

The students of Advanced Diploma have to clear all the three examinations viz.

- i) after six months from the enrolment session
- ii) after one year from the enrolment session and
- iii) after two years from the enrolment session

Eligibility: The admission shall be open to a candidate who has passed 10+2 (Non- Medical) examination with at least 40% marks in aggregate.

Course Scheme

Course Code	Skill Component / General Education	Course Title	Hours per week			Credits	Total Marks	
			L	T	P		Theory	Practical
Semester-I (Total marks: 500)								
Paper – 1	General Education	Communication Skills-I	2	0	3	6	40	60
Paper – 2	General Education	Computer Fundamentals-I	2	0	3	6	40	60
Paper – 3	Skill Component	Basic Electronics	2	0	3	6	40	60
Paper – 4	Skill Component	Analog Electronics	2	0	3	6	40	60
Paper – 5	Skill Component	Digital Electronics-I	2	0	3	6	40	60
			25			30		
Semester-II (Total marks: 500)								
Paper – 6	General Education	Communication Skills-II	2	0	3	6	40	60
Paper – 7	General Education	Computer Fundamentals-II	2	0	3	6	40	60
Paper – 8	Skill Component	Digital Electronics-II	2	0	3	6	40	60
Paper – 9	Skill Component	Antenna and Wave Propagation	2	0	3	6	40	60
Paper - 10	Skill Component	Analog Communication	2	0	3	6	40	60
			25			30		
Total Credits			100			120		

**PAPER – 1: COMMUNICATION SKILLS-I
(THEORY)**

Time: 3 Hrs.

**Max. Marks: 100
Theory Marks: 40
Practical Marks: 60**

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION–A

Writing Skills:

Formatting personal and business letters:

1. Standard informal personal letters such as letters to parents, friends, social pillars.
2. Standard formal letters to Govt. Officers, superiors, utility purposes, News Paper Editors etc.
3. Standard Business Letters: Introducing and Promoting business activities, Placing an order, Cancelling an order, Reporting defects in receipt of ordered goods, Reporting delay in receipt of ordered goods, Responding to delay in supply of goods and services, Maintaining good customer relationships, Making customers give feedback to your services, Creating catalogue of your goods and services, Acknowledging services rendered by others,

SECTION–B

1. Resume Writing.
2. Writing of memos, notices and customer-friendly information.
3. Basic punctuation.
4. Blog writing

SECTION–C

Speaking Skills:

1. Using courtesy words and expressions
2. Storing standard day to day usages sentences, words and expressions in mind.
3. Creating similar new sentences
4. Using declarative, imperatives, interrogative and exclamatory sentences.

SECTION–D

1. Speaking catchy phrases , proverbs and expressions
2. Differentiating confusing words
3. Making PowerPoint presentation
4. Making short speech
5. Group Discussion/ Conversation

Suggested Readings/ Books

1. KK Ramchandran, et al Business Communication, Macmillan, New Delhi
2. Swati Samantaray, Business Communication and Communicative English, Sultan Chand, New Delhi.
3. S.P. Dhanavel English and Communication Skills for Students of Science and Engineering (with audio CD)
4. Computer Mediated Communication 1st Edition by Crispin Thurlow Lara Martin Lengel , Alice Tomic.
5. Collins, Patrick. Speak with Power and Confidence. New York: Sterling, 2009.
6. Fitikides, T. J. Common Mistakes in English. London: Orient Longman.

**PAPER – 1: COMMUNICATION SKILLS-I
(PRACTICAL)**

Instructions for Practical Exam: Entire syllabus will be covered for practical.

1. Speaking Skills
2. Using courtesy words and expressions
3. Storing standard day to day usages sentences, words and expressions in mind.
4. Speaking catchy phrases , proverbs and expressions
5. Making PowerPoint presentation
6. Making short speech
7. Group Discussion/ Conversation

**PAPER – 2: COMPUTER FUNDAMENTALS-I
(THEORY)****Time: 3 Hrs.****Max. Marks: 100****Theory Marks: 40****Practical Marks: 60****Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION–A**Interacting with the Computer:**

Computer Components/ Input/ Output Devices: Input devices; keyboard, mouse, scanner, output devices; VDU and printer (impact and non-impact printers), plotter etc. Primary and secondary storage (auxiliary storage), secondary storage; magnetic disks – tracks and sectors, optical disk (CD, CD-RW and DVD memory).

Computer Software Concept: System software, application software, operating systems, and advantages of software and application packages. Introduction to operating systems such as ms-dos and windows, difference between dos and windows

Operating system-MS-Windows:

Operating system-Definition & functions, basics of Windows, Basic components of windows, icons, types of icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders, Control panel – display properties, adding and removing software and hardware, setting date and time, screensaver and appearance, Using windows accessories.

SECTION–B**Word Processor using Microsoft Office:**

Introduction to Word, Introduction to Parts of Word Window (Title Bar, Menu Bar, Tool Bar, The Ruler, Status Area), Page Setup, Creating New Documents, Saving Documents, Opening an Existing documents, insert a second document into an open document, Editing and formatting in document, Headers and Footers, Spell Checking, Printing document, Creating a Table Using the Table Menu and table formatting, Borders and Shading, Templates and Wizards, Mail Merge, importing, exporting and inserting files, formatting pages, paragraphs and sections, indents and outdents, creating lists and numbering, Headings, styles, fonts and font size Editing, positioning and viewing texts, Finding and replacing text, inserting page breaks, page numbers , book marks, symbols and dates.

SECTION–C**Presentation Software using Microsoft Office:**

Introduction to MS Power point, Power point elements, Templates, Wizards, Views, Exploring Power Point Menu, Working with Dialog Boxes, Adding Text, Adding Title, Moving Text Area, Resizing Text Boxes, Adding Art, Starting a New Slide, Starting Slide Show, Saving presentation; Printing Slides, Views (View slide sorter view, notes view, outlines view) Formatting and enhancing text formatting, Creating Graphs (Displaying slide show and adding multi – media)

SECTION–D**Spreadsheet using Microsoft Office:**

Elements of Electronics Spread Sheet and MS-Excel: Application/usage of Electronic Spread Sheet, Opening of Spread Sheet, and menu bar, Creation of cells and addressing of cells, Cell inputting.

Manipulation of cells: Enter texts numbers and dates, Creation of tables, Cell Height and Widths, Copying of cells.

Functions: Using functions: mathematical, statistical and financial function.

Spread sheets for Small accountings: Maintaining invoices/budgets, Totaling of various transactions, maintaining daily and monthly sales reports.

Charts: drawing different types of charts.

Reference Books:

1. Andrew S. Tanenbaum, David J. Wetherall Computer Networks (5th Edition), PHI.
2. P. K.Sinha, P. Sinha, Fundamentals of Computers, BPB Publishers.
3. A. Goel, Computer Fundamentals, Pearson Education.
4. Will Train, Gini Corter, Annette Marquis “Microsoft Office” BPB

**PAPER – 2: COMPUTER FUNDAMENTALS-I
(PRACTICAL)**

Instructions for Practical Exam: Entire syllabus will be covered for practical.

1. Operating system-MS-Windows:

Basic components of windows, icons, types of icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders, Control panel – display properties, adding and removing software and hardware, setting date and time, screensaver and appearance, Using windows accessories.

2. Word Processor using Microsoft Office:

Parts of Word Window (Title Bar, Menu Bar, Tool Bar, The Ruler, Status Area), Page Setup, Creating New Documents, Saving Documents, Opening an Existing documents, insert a second document into an open document, Editing and formatting in document, Headers and Footers, Spell Checking, Printing document, Creating a Table Using the Table Menu and table formatting, Borders and Shading, Templates and Wizards, Mail Merge, importing, exporting and inserting files, formatting pages, paragraphs and sections, indents and outdents, creating lists and numbering, Headings, styles, fonts and font size Editing, positioning and viewing texts, Finding and replacing text, inserting page breaks, page numbers , book marks, symbols and dates.

3. Presentation Software using Microsoft Office:

Power point elements, Templates, Wizards, Views, Exploring Power Point Menu, Working with Dialog Boxes, Adding Text, Adding Title, Moving Text Area, Resizing Text Boxes, Adding Art, Starting a New Slide, Starting Slide Show, Saving presentation; Printing Slides, Views (View slide sorter view, notes view, outlines view) Formatting and enhancing text formatting, Creating Graphs (Displaying slide show and adding multi – media)

4. Spreadsheet using Microsoft Office:

Elements of Electronics Spread Sheet and MS-Excel: Opening of Spread Sheet, menu bar, Creation of cells and addressing of cells, Cell inputting.

Manipulation of cells: Enter texts numbers and dates, Creation of tables, Cell Height and Widths, Copying of cells.

Functions: Using functions: mathematical, statistical and financial function.

Spread sheets for Small accountings: Maintaining invoices/budgets, Totaling of various transactions, maintaining daily and monthly sales reports.

Charts: drawing different types of charts.

PAPER- 3: BASIC ELECTRONICS**Time: 3 Hours****M. Marks: 100****Theory: 40****Practical: 60****Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Instructions: for Practical Exam: Entire syllabus will be covered for practical.

SECTION-A**Passive Components:**

Introduction to passive components, resistance, capacitance and inductance, Ohm's law, components equations in series and parallel.

SECTION-B**Electricity:**

A brief review of various applications of electricity, difference between AC and DC, units of voltage, current and resistance, concept of electromagnetic induction and production of alternating e.m.f. – single phase and poly phase, concept of 3 phase system star and delta connections, voltage and current relations.

SECTION-C**Measurement Instruments:**

Introduction to multimeter, cathode ray oscilloscope, function generators.

SECTION-D**Network Analysis:**

Kirchhoff's voltage law, Kirchhoff's current law, signals and wave forms, periodic and singularity functions.

PAPER- 4: ANALOG ELECTRONICS**Time: 3 Hours****M. Marks: 100****Theory: 40****Practical: 60****Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Instructions: for Practical Exam: Entire syllabus will be covered for practical.

SECTION-A**Diode Circuits:**

Introduction to semiconductors, theory of PN junction diode, depletion layer, Zener diode.

SECTION-B**Application of Diodes:**

Zener diode as voltage regulator, rectifiers—half wave and full wave, filters.

SECTION-C**Bipolar Junction Transistors:**

Junction transistor, current components, transistor as an amplifier.

SECTION-D**Field Effect Transistors:**

The JFET, MOSFET- enhancement type and depletion type.

PAPER-5: DIGITAL ELECTRONICS – I**Time: 3 Hours****M. Marks: 100****Theory: 40****Practical: 60****Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Instructions: for Practical Exam: Entire syllabus will be covered for practical.

SECTION-A**Number System and Binary Code:**

Introduction, binary, octal and hexadecimal number system. signed and unsigned numbers, binary operations—addition, subtraction. multiplication and division.

SECTION-B**Logic Gates:**

OR, AND, NOT, NOR, NAND, Ex-OR gates.

SECTION-C**Boolean Algebra:**

Laws and axioms of boolean algebra, SOP, POS, minimization of boolean expression, Karnaugh maps.

SECTION-D**Combinational Logic Circuits:**

Introduction to combinational circuit design, adders, subtractor, multiplexer, de-multiplexer, encoders, decoders.

**PAPER – 6: COMMUNICATION SKILLS-II
(THEORY)**

Time: 3 Hrs.

**Max. Marks: 100
Theory Marks: 40
Practical Marks: 60**

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION–A

Reading Skills

1. News paper reading skills
2. Content reading through internet sources
3. Comprehension Passages

SECTION–B

Listening Skills

1. Receiving voice calls
2. Attending active phone calls and responding
3. Daily news listening exercises (Audio and Video)
4. Note taking
5. Listening to native speakers conversations.

SECTION–C

Common Mistakes

1. How to avoid common mistakes in: Nouns, Pronouns, Adjectives, Adverbs, Prepositions, word usage, helping verbs, verbs, phrases, clauses and sentences

Foreign Words

1. Frequently used foreign words.

SECTION–D

Advertisement Writing

Classified, Display, Boxed, Billboard, Online

Suggested Readings/Books:

1. KK Ramchandran, et al Business Communication, Macmillan, New Delhi
2. Swati Samantaray, Business Communication and Communicative English, Sultan Chand, New Delhi.
3. S.P. Dhanavel English and Communication Skills for Students of Science and Engineering (with audio CD)
4. Computer Mediated Communication 1st Edition by Crispin Thurlow (Lara Martin Lengel , Alice Tomic.
5. Collins, Patrick. Speak with Power and Confidence. New York: Sterling, 2009.
6. Fitikides, T. J. Common Mistakes in English. London: Orient Longman.

**PAPER – 6: COMMUNICATION SKILLS-II
(PRACTICAL)**

Instructions for Practical Exam: Entire syllabus will be covered for practical.

1. Receiving voice calls
2. Attending active phone calls and responding
3. Daily news listening exercises (Audio and Video)
4. Note taking
5. Listening to native speakers conversations.
6. Advertisements Writing
7. Frequently used foreign words.

**PAPER – 7: COMPUTER FUNDAMENTALS-II
(THEORY)**

Time: 3 Hrs.

**Max. Marks: 100
Theory Marks: 40
Practical Marks: 60**

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION–A

Introduction to Networks: Network Definition, Basic Components of a Network, Network types and topologies, Uses of Computer Networks, Network Architecture.

Transmission Media: Coaxial cable, twisted pair cable, fiber optics & satellites. OSI reference model, TCP/IP reference model, comparison of OSI and TCP reference model.

Computer Communication

Basic of Computer Networks: LAN, WAN, MAN.

Internet: Introduction to internet and its application/services.

Service on Internet: WWW and web-sites, Electronic mails, Communication on Internet.

SECTION–B

Web Browsers: Internet Explorer, Chrome and Firefox

Surfing the Internet: Giving the URL address, Search, Moving Around in a web-site, Printing or saving portion of web pages, down loading/uploading

Chatting on Internet

Email: Basic of electronic mail, Creating Email id, Mailbox: Inbox and outbox. Using Emails: Viewing an email, sending an Email, Saving mails, sending same mail to various users, Document handling: Sending soft copy as attachment, Enclosures to email, sending a Portion of document as email

SECTION–C

Tally:

Introduction to Financial Accounting: accounting concepts.

Financial Accounting Basics: company creation, accounts configuration, accounts classification, accounts master, creations of voucher, types and classes, accounts vouchers.

Financial Accounting Advanced: final accounts, bank reconciliation statement

SECTION–D

Inventory: introduction to inventory, stock groups, stock categories, stock item, reorder levels, locations / go downs, units of measure, price list, tariff classification, dealer excise, opening stock, pure inventory voucher, entry of pure inventory voucher, bill of material, purchase and sales order, foreign exchange transactions.

Business Management: New Year books, MIS reports, budget management, scenario management.

Suggested Readings/Books

1. Tanenbaum A. S., “Computer Networks”, PHI.
2. TALLY ERP 9 TRAINING GUIDE - 4TH REVISED & UPDATED EDITION – 2018

**PAPER – 7: COMPUTER FUNDAMENTALS-II
(PRACTICAL)**

Instructions for Practical Exam: Entire syllabus will be covered for practical.

1. Network types and topologies.
2. Electronic mails.
3. Communication on Internet.
4. Surfing the Internet: Giving the URL address, Search, Moving Around in a web-site, Printing or saving portion of web pages, down loading/uploading
5. Chatting on Internet
6. Introduction to financial accounting: accounting concepts.
7. Financial accounting basics: company creation, accounts configuration, accounts classification, accounts master, creations of voucher, types and classes, accounts vouchers.
8. Financial accounting advanced: final accounts, bank reconciliation statement
9. Inventory: introduction to inventory, stock groups, stock categories, stock item, reorder levels, locations / go downs, units of measure, price list, tariff classification, dealer excise, opening stock, pure inventory voucher, entry of pure inventory voucher, bill of material, purchase and sales order, foreign exchange transactions.
10. Business management: New Year books, MIS reports, budget management, scenario management.

PAPER-8: DIGITAL ELECTRONICS -II**Time: 3 Hours****M. Marks: 100****Theory: 40****Practical: 60****Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Instructions: for Practical Exam: Entire syllabus will be covered for practical.

SECTION-A**Sequential Circuits:**

Introduction, latches, flip flops, registers and counters.

SECTION-B**D/A Converters:**

Introduction, weighted register D/A converter, binary ladder D/A converter,

SECTION-C**A/D Converters:**

Introduction, successive approximation A/D converter, dual slope A/D converter.

SECTION-D**Semiconductor Memories:**

Introduction, memory organization, classification and characteristics of memories. sequential memories, ROM, RAM memories.

PAPER-9: ANTENNA AND WAVE PROPAGATION**Time: 3 Hours****M. Marks: 100****Theory: 40****Practical: 60****Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Instructions: for Practical Exam: Entire syllabus will be covered for practical.

SECTION-A**Introduction:**

Physical concept of radiation in single wire, two wire, and dipole, current distribution on a thin wire antenna.

SECTION-B**Fundamental Parameters of Antenna:**

Radiation pattern, gain, antenna efficiency, beamwidth, bandwidth, polarisation, antenna input impedance, antenna temperature.

SECTION-C**Ground wave Propagation:**

Duct propagation, tropospheric propagation.

SECTION-D**Ionospheric Propagation:**

Structure of ionosphere, propagation of radiowaves through ionosphere.

PAPER-10: ANALOG COMMUNICATION**Time: 3 hours****M. Marks: 100****Theory: 40****Practical: 60****Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Instructions: for Practical Exam: Entire syllabus will be covered for practical.

SECTION-A**Introduction:**

Definition of communication, communication system, block diagram of communication system, basic transmission signals. sampling theorem, need of modulation, definition of modulation.

SECTION-B**Amplitude Modulation:**

Introduction, Amplitude Modulation (AM) transmission and reception.

SECTION-C**Frequency Modulation:**

Introduction, Frequency Modulation (FM) transmission and reception.

SECTION-D**Phase Modulation:**

Introduction, Phase Modulation (PM) transmission and reception.