For Batch 2016-17 Onwards
SCHEME OF EXAMINATION

for

BACHELOR OF VOCATION

In

(MOBILE COMMUNICATION)

5th SEMESTER and 6th SEMESTER

Offered by

University School of Information, Communication & Technology
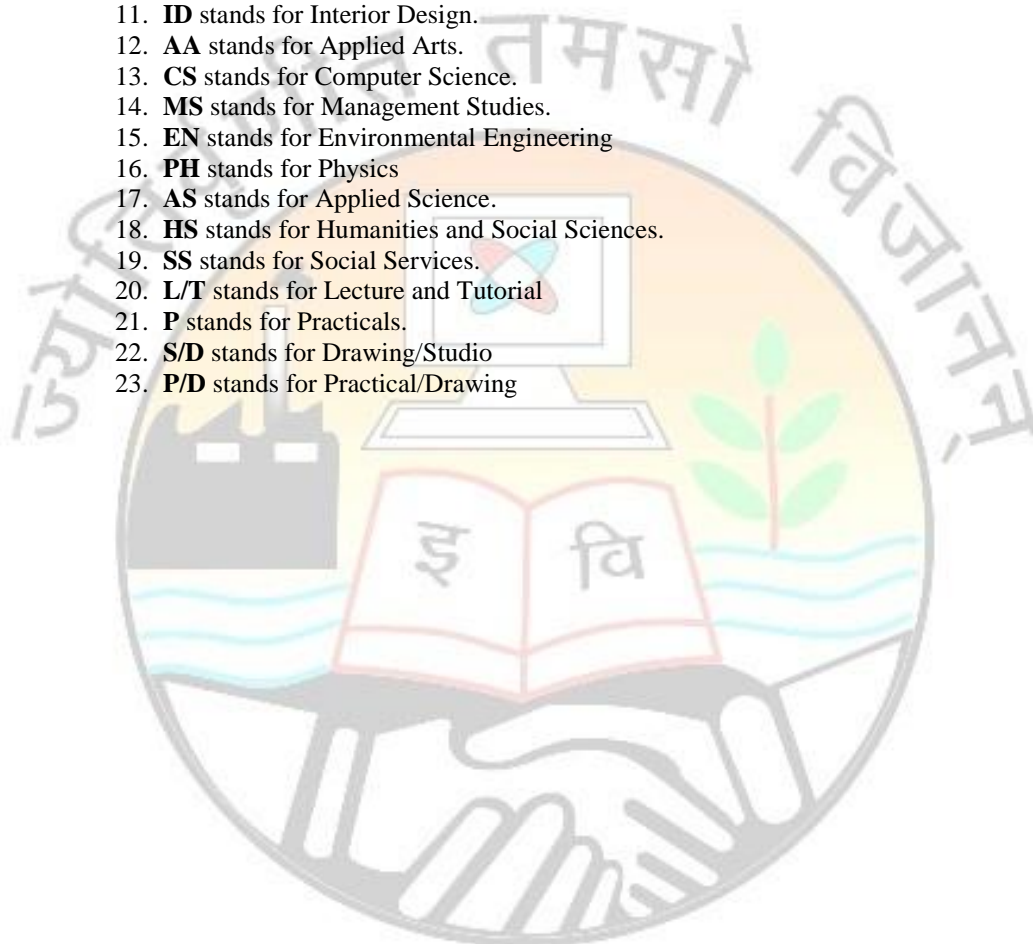
GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY

Guru Gobind Singh Indraprastha University
Dwarka, Delhi – 110078 [INDIA]
www.ipu.ac.in

The Scheme and Syllabus for B.Voc (Mobile Communication) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.

NOMENCLATURE OF CODES GIVEN IN THE SCHEME OF B.VOC

1. **ET** stands for Engineering and Technology.
2. **V** stands for Vocation.
3. **MC** stands for Mobile Communication.
4. **SD** stands for Software Development.
5. **AE** stands for Automobile.
6. **CE** stands for Consumer Electronics.
7. **PT** stands for Printing Technology.
8. **CT** stands for Construction Technology.
9. **RA** stands for Refrigeration & Air-Conditioning.
10. **PD** stands for Power Distribution Management.
11. **ID** stands for Interior Design.
12. **AA** stands for Applied Arts.
13. **CS** stands for Computer Science.
14. **MS** stands for Management Studies.
15. **EN** stands for Environmental Engineering
16. **PH** stands for Physics
17. **AS** stands for Applied Science.
18. **HS** stands for Humanities and Social Sciences.
19. **SS** stands for Social Services.
20. **L/T** stands for Lecture and Tutorial
21. **P** stands for Practicals.
22. **S/D** stands for Drawing/Studio
23. **P/D** stands for Practical/Drawing

BACHELOR OF VOCATION
(MOBILE COMMUNICATION)
FIFTH SEMESTER EXAMINATION
(LEVEL-VII)

Paper Code	Paper ID	Paper	L	T/P	Credits
THEORY PAPERS					
ETVHS-701		Technical English (Common to all disciplines)	3	0	3
ETVMC-701		Wireless Communication	3	0	3
CORE ELECTIVE-II (Select any one)					
ETVMC-705		Signals and Systems	3	0	3
ETVMC-707		Mobile Application Development	3	0	3
CORE ELECTIVE-III (Select any one)					
ETVSD-715		Web Engineering	3	0	3
ETVSD-717		Web Application and Development	3	0	3
GENERAL ELECTIVE-II (Select any one)*					
ETVSS-751		NCC	0	2	1
ETVSS-753		NSS	0	2	1
ETVSS-755		Sports	0	2	1
ETVSS-757		Community Services	0	2	1
ETVSS-759		ECO Club	0	2	1
ETVSS-761		YOGA	0	2	1
PRACTICAL/VIVA VOCE (Select any one Lab based on CORE ELECTIVE-II)					
ETVMC-755		Signals and Systems Lab	0	2	2
ETVMC-757		Mobile Application Development Lab	0	2	2
PRACTICAL/VIVA VOCE (Select any one Lab based on CORE ELECTIVE-III)					
ETVSD-765		Web Engineering Lab	0	2	2
ETVSD-767		Web Application and Development Lab	0	2	2
PRACTICAL/VIVA VOCE					
ETVHS-751		Language Lab (Common to all disciplines)	0	3	3
ETVMC-751		Wireless Communication Lab	0	2	2
ETVMC-761		Minor Project	0	8	4
ETVMC-763		Industrial Training-IV	0	2	4
TOTAL			**12**	**21**	**30**

NOTE:

There are five industrial trainings to be carried out by the student(s) in B.Voc course. Industrial Trainings I, III and V will be with weightage of two credits each. These trainings are to be carried out during winter vacations for the duration of two weeks. Industrial Trainings II and IV will be with weightage of four credits each. These trainings are to be carried out during summer vacations for the duration of four to six weeks. These training may be done from industry/Skill Knowledge Providers (SKPs) /Sector Skill Councils (SSCs) / Training Centers/Institutes. Student should submit training report during evaluation. Industrial Training done at the end of the semester will be evaluated in the subsequent semesters.

*Non University Examination System (NUES)

The Scheme and Syllabus for B.Voc (Mobile Communication) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.

BACHELOR OF VOCATION
(MOBILE COMMUNICATION)
SIXTH SEMESTER EXAMINATION
(LEVEL-VII)

Paper Code	Paper ID	Paper	L	T/P	Credits
THEORY PAPERS					
ETVMC-702		Embedded Systems	3	0	3
ETVSD-714		Network Security	3	0	3
CORE ELECTIVE-IV (Select any one)					
ETVMC-706		Ad hoc and Sensor Networks	3	0	3
ETVMC-708		Digital Signal Processing	3	0	3
CORE ELECTIVE-V (Select any one)					
ETVMC-710		Satellite Communication	3	0	3
ETVMC-712		Internet of things	3	0	3
ETVMC-714		Telecom Service Management	3	0	3
PRACTICAL/VIVA VOCE (Select any one Lab based on CORE ELECTIVE-IV)					
ETVMC-756		Ad hoc and Sensor Networks Lab	0	2	2
ETVMC-758		Digital Signal Processing Lab	0	2	2
PRACTICAL/VIVA VOCE					
ETVMC-752		Embedded Systems Lab	0	2	2
ETVSD-764		Network Security Lab	0	2	2
ETVMC-760		Industrial Training-V	0	2	4
ETVMC-762		Major Project#*	0	24	12
TOTAL			**12**	**32**	**34**

NOTE:
There are five industrial trainings to be carried out by the student(s) in B.Voc course. Industrial Trainings I, III and V will be with weightage of two credits each. These trainings are to be carried out during winter vacations for the duration of two weeks. Industrial Trainings II and IV will be with weightage of four credits each. These trainings are to be carried out during summer vacations for the duration of four to six weeks. These training may be done from industry/Skill Knowledge Providers (SKPs) /Sector Skill Councils (SSCs) / Training Centers/Institutes. Student should submit training report during evaluation. Industrial Training done at the end of the semester will be evaluated in the subsequent semesters.

#*The student will submit a synopsis at the beginning of the semester for approval from the departmental committee in a specified format, thereafter he/she will have to present the progress of the work through seminars and progress reports. Seminar related to major project should be delivered one month after staring of Semester. The progress will be monitored through seminars and progress reports. *The students may be allowed to do Industrial Major Project on-site during 5 days in a week and class work should be completed in 2 working days in the respective institution. If in case, the classes are held during Saturday /Sunday then faculty should be given off in lieu of Saturday/Sunday.*

For Award of Diploma:
1. The total number of the credits of the Diploma (Mobile Communication) Programme = 64
2. Student shall be required to appear in examinations of all courses. However, to award the Diploma (Mobile Communication) a student shall be required to earn a minimum of 60 credits.

For Award of Advanced Diploma:
1. The total number of the credits of the Advance Diploma (Mobile Communication) Programme = 128.
2. Student shall be required to appear in examinations of all courses. However, to award the Advanced Diploma (Mobile Communication) a student shall be required to earn a minimum of 120 credits.

For Award of B. Voc Degree:
1. The total number of the credits of the B. Voc. (Mobile Communication) Programme = 192.
2. Student shall be required to appear in examinations of all courses. However, to award the degree a student shall be required to earn a minimum of 180 credits.

The Scheme and Syllabus for B.Voc (Mobile Communication) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.

TECHNICAL ENGLISH
(Common to all Disciplines)

		L	T/P	C
Paper Code: ETVHS-701		3	0	3
Paper: Technical English				

INSTRUCTIONS TO PAPER SETTER: **MAXIMUM MARKS: 75**
1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question. No. 1 rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objectives:
- *To equip students to recognize, explain, and use the rhetorical strategies and the formal elements of specific genres of technical communication, such as technical abstracts, data based research reports, instructional manuals, technical descriptions etc.*
- *To help students understand the process of collection, analysis, documentation, and reporting of research clearly, concisely, logically, and ethically and understand the standards for legitimate interpretations of research data within scientific and technical communities.*
- *To initiate students into critical and creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information towards meaningful and effective communication*
- *To help students understand ethical considerations in technical and professional writing, realizing the consequences of various communication acts.*

Learning Outcomes: Upon successful completion of the course the student shall be able to:
- *Understand and demonstrate composing processes through invention, organization, drafting, revision, editing, and presentation as evidenced in satisfactory completion of all the written, visual, web-based, and oral discourses to be submitted in this course.*
- *To recognize and use the rhetorical and stylistic elements necessary for the successful practice of scientific and technical communication;*
- *Create various products most frequently used in scientific and technical communication.*
- *Develop ethical problem-solving communication skills in professional situations.*

UNIT-I
Technical Writing: Definition, Purpose and Characteristics of Technical Writing.
Technical Writing Skills: Methods and means of the Pre-writing stage, the Writing Stage and the Post-writing Stage.

[T1, T2][No. of Hrs. 12]

UNIT-II
Formal Formatting: Arrangement of Formal Elements, Front Material, Format Devices in the Body of Formal Report-Heading, Pagination, End Material – Citations, References and Bibliography, Appendix.

[T1, T2][No. of Hrs. 10]

UNIT-III
Writing and Designing for Electronic Media: Use of Internet as a Writing tool; designing and writing for multimedia applications and the World Wide Web.

[T1, T2][No. of Hrs. 12]

UNIT-IV
Research and Writing Ethics: Explaining Forms and Consequences of Plagiarism, Introduction to Intellectual Property Right and Copy Right Laws.

[T1, T2][No. of Hrs. 11]

Text Book(s):
[T1]   Sides, Charles H., "How to Write and Present Technical Information", Cambridge Univ. Press, 1999.
[T2]   Basu, B. N., "Technical Writing", PHI Learning Pvt. Ltd., 2007.
Reference Book(s):
[R1]   Beer, David F. and David A. McMurrey, "A Guide to Writing as an Engineer", New York: Wiley, 2005.
[R2]   Gibaldi, Joseph, and Walter S. Achtert, "MLA Handbook for Writers of Research Papers, Thesis, and Dissertations", Modern Language Association, 1980.
[R3]   Rubens, Philip, "Science and Technical Writing: A Manual of Style", Routledge, 2002.
[R4]   Anderson, Marilyn, Pramod K. Nayar, and Madhucchandra Sen, "Critical Thinking, Academic Writing and Presentation Skills", Pearson. 2010.

The Scheme and Syllabus for B.Voc (Mobile Communication) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.

WIRELESS COMMUNICATION

Paper Code: ETVMC 701   L   T/P   C
Paper: Wireless Communication   3   0   3

INSTRUCTIONS TO PAPER SETTER: **MAXIMUM MARKS: 75**
1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question. No. 1 rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective: The objective of the course is to introduce various wireless networks, mobile networks and their basic architecture starting from 2G through to 3G and 4G.

UNIT-I
Introduction To Wireless Communication Systems: Evolution of mobile radio communications; examples of wireless comm. systems; overview of generations of cellular systems, comparison of various wireless systems.
Introduction to Personal Communication Services (PCS): PCS architecture, Mobility management, Networks signaling. A basic cellular system, multiple access techniques: FDMA, TDMA, CDMA.
Introduction to Wireless Channels and Diversity: Fast Fading Wireless Channel Modeling, Rayleigh/Ricean Fading Channels, BER Performance in Fading Channels, Introduction to Diversity modeling for Wireless Communications.
Tele-traffic engineering basics: Traffic, traffic units, routing, grade of service. Loss Systems, Delay systems, queuing systems.
[T1, T2][T3][No. of Hrs. 13]

UNIT-II
2G Networks: Second generation, digital, wireless systems: GSM, IS-95 CDMA. Global system for Mobile Communication (GSM) system overview: GSM Architecture, Mobility Management, Network signaling, mobile management, voice signal processing and coding. **Spread Spectrum Systems-** Cellular code Division Access Systems-Principle, Power Control, effects of multipath propagation on code division multiple access.
[T1, T2][T3][No. of Hrs. 11]

UNIT-III
2.5G Mobile Data Networks: Introduction to Mobile Data Networks, General Packet Radio Services (GPRS): GPRS architecture, GPRS Network nodes, EDGE,Wireless LANs, (IEEE 802.11), Mobile IP.
Third Generation (3G) Mobile Services: Introduction to International Mobile Telecommunications 2000 (IMT 2000) vision, Wideband Code Division Multiple Access (W-CDMA), and CDMA 2000, Quality of services in 3G and 4G, Introduction to 5G.
[T1, T2][T3][No. of Hrs. 11]

UNIT-IV
Wireless personal area networks (WPAN): Blue tooth, IEEE 802.15, architecture, protocol stack.
Wi-Max, introduction to Mobile Adhoc Networks.Broadband access Networks, Intelligent Networks, Next Generation Networks (NGN), Physical and Virtual Networks, Number Portability, Corporate Networks.
[T1, T2][T3][No. of Hrs. 10]

Text Books:
[T1]   Raj Pandya, "Mobile & Personnel Communication Systems and Services", Prentice Hall India, 2001.
[T2]   Theodore S. Rappaport, "Wireless Communication- Principles and Practices", Pearson Education Pvt. Ltd, 5th Edition, 2008.
[T3]   Theodore S. Rappaport, Wireless Communication, Prentice hall.
Reference Books:
[R1]   T. L. Singhal "Wireless Communication", Tata McGraw Hill Publication.
[R2]   Jochen Schiller, "Mobile communications", Pearson Education Pvt. Ltd., 2002.
[R3]   YiBing Lin & Imrich Chlamatac, "Wireless and Mobile Networks Architecture," John Wiley, 2001
[R4]   Lee, W.C.Y., "Mobile Cellular Telecommunication", 2nd Edition, McGraw Hill,1998.
[R5]   Smith & Collins, "3G Wireless Networks," TMH, 2007
[R6]   Schiller, Jochen, "Mobile Communications", 2nd Edition, Addison Wesley
[R7]   Vijay Garg & Elsevier, "Wireless Communications and Networking",
[R8]   Kamilo Feher, "Wireless Digital Communication", PHI
[R9]   William C. Y. Lee, "Mobile Communications Engineering", Tata Mc-Graw Hill Publications
[R10]   C. K. Toh, "Adhoc Mobile Wireless Network", Pearson.

The Scheme and Syllabus for B.Voc (Mobile Communication) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.

SIGNALS AND SYSTEMS
(Core Elective-II)

		L	T/P	C
Paper Code: ETVMC-705		3	0	3
Paper: Signals and Systems				

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 12.5 marks.

***Objective**: This is the first course for representation of various types of electronic signals and LTI systems. Applications of Fourier series, understanding of Fourier transforms and sampling of various signals. Analysis of various systems using the Z transforms, Laplace transforms.*

UNIT-I
Continuous And Discrete Time Signals: Definition of signal**,** Classification of Signals: Periodic and Aperiodic, Even and Odd, Energy and Power signals**,** Deterministic and Random signals**.**
Singular Functions: Unit impulse, unit step, unit ramp, complex and exponential, parabolic, Signum, Sincetc. Properties of unit impulse in continuous and discrete domain, properties of basic functions w. r. t. orthogonality.
Transformation in independent variable of signals: Time scaling, Time shifting, Amplitude scaling. Representation of signals in terms of singular function and orthogonal functions.
Systems: Definition of system, types of systems: Linear and nonlinear, static and dynamic, causal and non-causal, time variant and invariant, invertible and non-invertible, stable and non-stable. System described by differential equation and difference equation.
LTI System: Properties of LTI System, impulse response, convolution and its properties in continuous and discrete domain with proof. Linear convolution in continuous and discrete domain using graphical method, using general formula and matrix method.

[T1, T2][No. of Hrs. 12]

UNIT-II
Fourier series: Need and application of Fourier series. Fourier series representation of continuous time and discrete time signals using exponential method and trigonometric method. Magnitude and Phase spectrum of signals.
Fourier Transform: Properties of the Continuous time and discrete time Fourier Transform. Magnitude and Phase representations of frequency response of LTI systems Analysis and characterization of LTI systems using Differential Equations and Difference equation.

[T1,T2][No. of Hrs. 11]

UNIT-III
Magnitude- Phase Representation of Frequency Response of LTI System: Linear phase, concept of phase delay and group delay. All pass system.
Laplace Transform: Properties of Laplace transform, concept of ROC and its properties. Computation of impulse response & transfer function using Laplace transform. Inverse-Laplace transforms. Computation of impulse response, total response (zero state and zero input response) & transfer function using Laplace transform**.**

[T1, T2] [No. of Hrs. 11]

UNIT-IV
Sampling: Sampling of low pass signals, ideal sampling, Aliasing effect, Nyquist rate, reconstruction of signal. Sampling of discrete time signals**.**
Z Transform: Region of convergence – properties of ROC, Properties of Z-transform.
Inverse Z-transform using contour integration - Residue theorem, Power series expansion and partial fraction expansion. Relationship between Z-transform, Fourier transform and Laplace transform. Computation of impulse response, total response (Zero state and Zero input response) & Transfer function using Z-Transform. Stability of discrete-time LTI System.

[T1, T2] [No. of Hrs. 11]

Text Book(s):
[T1]   Alan V. Oppenheim, Alan S. Willsky, S. Hamid Nawab, "Signals & Systems", 2nd Edition, Pearson Education, 2007
[T2**]**   Simon Haykin and Barry Van Veen, "Signals and Systems", John Wiley, 2004.

The Scheme and Syllabus for B.Voc (Mobile Communication) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.

Reference Book(s):
[R1]   M. J. Roberts, "Signals and Systems Analysis using Transform Method and MATLAB", TMH 2003.
[R2]   Tarun Kumar Rawat "Signals and Systems ", Oxford University Press
[R3]   A. Anand Kumar, "Signals and Systems" 3rd Edition, PHI
[R4]   Ramesh Babu and R. Anandanatrajan, "Signals and System", 4th Edition Sci Tech, 2013
[R5]   Moman H. Hays, "Digital Signal Processing", Schaum's outlines, Tata McGraw-Hill2004.
[R6]   John G. Proakis and Dimitris G. Manolakis, "Digital Signal Processing, Principles, Algorithms and Applications", 3rd Edition. PHI.
[R7]   C. Alexander and M. Sadiku, "Fundamentals of Electric Circuits", McGraw Hill (2008)
[R8]   H. P. Hsu, "Signals and Systems", Tata McGraw Hill
[R9]   S. T. Karris, "Signal and Systems: with MATLAB Computing and Simulink Modelling", Orchard Publications
[R10]   W. Y. Young, "Signals and Systems with MATLAB", Springer

The Scheme and Syllabus for B.Voc (Mobile Communication) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.

MOBILE APPLICATION DEVELOPMENT
(Core Elective-II)

		L	T/P	C
Paper Code: ETVMC-707		3	0	3
Paper: Mobile Application Development				

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objectives:Should have studied papers such as Communication systems, Data communications and networking and wireless networks. To understand the concepts of mobile operating systems and application development. Introduce Mobile Application Development environment.

UNIT-I
Introduction: What is mobile Application Programming, Different Platforms, Architecture and working of Android, iOS and Windows phone 8operating system, Comparison of Android, iOS and Windows phone 8
Android Development Environment: What is Android, Advantages and Future of Android, Tools and about Android SDK, Installing Java, Eclipse, and Android, Android Software Development Kit for Eclipse, Android Development Tool: Android Tools for Eclipse, AVDs: Smartphone Emulators, Image Editing.
[T1, T2, T3, R1, R2][No. of Hrs. 10]

UNIT-II
Android Software Development Platform: Understanding Java SE and the Dalvik Virtual Machine, Directory Structure of an Android Project, Common Default Resources Folders, The Values Folder, Leveraging Android XML, Screen Sizes, Launching Your Application: The AndroidManifest.xml File, Creating Your First Android Application.
Android Framework Overview: The Foundation of OOP, The APK File, Android Application Components, Android Activities: Defining the User Interface, Android Services: Processing in the Background, Broadcast Receivers: Announcements and Notifications, Content Providers: Data Management, Android Intent Objects: Messaging for Components, Android Manifest XML: Declaring Your Components.
[T1, T2, T3, R1][No. of Hrs. 13]

UNIT-III
Views and Layouts, Buttons, Menus, and Dialogs, Graphics Resources in Android: Introducing the Drawables, Implementing Images, Core Drawable Subclasses, Using Bitmap, PNG, JPEG and GIF Images in Android, Creating Animation in Android.
Handling User Interface(UI) Events: An Overview of UI Events in Android, Listening for and Handling Events, Handling UI Events via the View Class, Event Callback Methods, Handling Click Events, Touchscreen Events, Keyboard Events, Context Menus, Controlling the Focus. Content Providers: An Overview of Android Content Providers, Defining a Content Provider, Working with a Database. Intents and Intent Filters: Intent, Implicit Intents and Explicit Intents, Intents with Activities, Intents with Broadcast Receivers.
[T1, T2, T3,R1,R2][No. of Hrs. 13]

UNIT-IV
Advanced Android: New Features in Android 4.4. iOS Development Environment: Overview of iOS, iOS Layers, Introduction to iOS application development. Windows phone Environment: Overview of windows phone and its platform, Building windows phone application.
[T1, T2,T3, R1,R2,R3][No. of Hrs. 09]

Text Books:
[T1]   Onur, Cinar: "Beginning Android 4", Apress Publication.
[T2]   Reto Meier, "Professional Android 4 Application Development", Wrox Publication
[T3]   István Novák, Zoltan Arvai, György Balássy and David Fulop, "Beginning Windows 8 Application Development", Wiley Publication.

Reference Books:
[R1]   Allen Sanders and Kevin Ashley, "Programming: Application Development with C# and XML", Wrox Publication
[R2]   Thomas M. Duffy, "Programming with Mobile Applications: Android, iOS and Windows Phone 7", Cengage Course Technology, Edition 2012
[R3]   Thomas J. Duffy, "Programming with Mobile Applications 1e", Cengage Learning, @2013

The Scheme and Syllabus for B.Voc (Mobile Communication) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f, 1st August, 2018.

WEB ENGINEERING
(Core Elective-III)

Paper Code: ETVSD-715   **L   T/P   C**
Paper: Web Engineering   **3   0   3**

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**
1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective: This paper gives understanding of web designing to the students.

UNIT-I
History of the Internet, Basic internet protocols, World Wide Web (W3C), HTTP: Hypertext Transfer Protocol.
Mark-up languages: XHTML**:** Introduction to HTML, basics of XTHML, HTML elements, HTML tags, lists, tables, frames, forms, defining XHTML's abstract syntax, defining HTML documents.
CSS style sheets: Introduction, CSS core syntax, text properties, CSS box model, normal flow box layout, other properties like list, tables, DHTML, XML, XML documents & vocabulary, XML versions & declarations, Introduction to WML.
                                                                                     [T1, T2][No. of Hrs. 11]
UNIT-II
Client Side Programming: JAVA Scripts, basic syntax, variables & data-types, literals, functions, objects, arrays, built-in objects, JAVA Script form programming, Intrinsic event handling, modifying element style, document trees,
Server side programming: Java Servlets: Servlet architecture, life cycle, parameter data, sessions, cookies, servlets capabilities, servlets & concurrency. Introduction to JSP, JSP Tags, JSP life cycle, custom tags.
                                                                                     [T1, T2][No. of Hrs. 12]
UNIT-III
Security Threats, Security risks of a site, Web attacks and their prevention, Web security model, Session management, authentication, HTTPS and certificates, Application vulnerabilities and defenses. Client-side security, Cookies security policy, HTTP security extensions, Plugins, extensions, and web apps, Web user tracking. Server-side security tools, Web Application Firewalls (WAFs) and Fuzzers.
                                                                                     [T1, T2][No. of Hrs. 10]
UNIT-IV
Introduction to Web 2.0 and Web 3.0, Concepts and Issues, Latest Trends in Web Technologies. Web Security concerns. Applications of Web Engineering Technologies in distributed systems etc. Case studies using different tools.
                                                                                     [T1,T2][No. of Hrs. 12]
Text Books:
[T1]   Jackson, "Web Technologies: A Computer Science Perspective", Pearson Education India, 2007.
[T2]   Roger S Pressman, "Web Engineering: A Practitioner's Approach", David Lowe, TMH, 2008.

Reference Books:
[R1]   Achyut Godbole, AtulKahate, "Web Technologies", McGraw-Hill Education, Third Edition.
[R2]   Uttam K Roy, "Web Technologies", Oxford University Press, 2012.
[R3]   Chris Bates, "Web Programming", Wiley
[R4]   Gertel Keppel, Birgit Proll, Siegfried Reich, Werner R., "Web Engineering", John Wiley.
[R5]   Berner's LEE, Godel and Turing, "Thinking on the Web", John Wiley & Sons Inc.

The Scheme and Syllabus for B.Voc (Mobile Communication) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.

WEB APPLICATION AND DEVELOPMENT
(Core Elective-III)

		L	T/P	C
Paper Code: ETVSD-717		3	0	3
Paper: Web Application and Development				

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.

2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5marks.

Objectives & Pre-requisites: Knowledge of basics of programming- constructs and principles is a prerequisite to this course. Programming through Java script is taught in this course to enable secure Web development.

UNIT-I
Introduction to HTML & CSS:
HTML: HTML Basics, HTML Responsive, HTML Entities, HTML Forms, HTML5 Canvas, HTML5 SVG, HTML5 Data Storage, HTML5 Audio and Video
CSS: CSS Introduction, CSS Syntax, CSS Text, CSS Backgrounds, CSS Fonts, CSS Links, CSS Lists, CSS Tables, CSS Box Model, CSS Margins, Dimensions, Display, CSS Navigation Bar, CSS Attribute Selectors, CSS Rounded Corners, CSS Border Images, CSS Backgrounds, CSS Colors, CSS Animations

[T1][No. of Hrs. 11]

UNIT-II
Introduction to JavaScript and JQuery
Introduction to JavaScript: JavaScript Introduction, JavaScript Output, JavaScript Variables, JavaScript Operators, JavaScript Arithmetic, JavaScript DataTypes, JavaScript Assignment, JavaScript Functions, JavaScript Objects, JavaScript Scope, JavaScript Events, JavaScript Strings and String Methods, JavaScript Numbers and Number Methods, JavaScript Math, JavaScript Dates: Formats and Methods, JavaScript Booleans,JavaScript Comparisons, JavaScript Conditions, JavaScript Switch, JavaScript Loops, JavaScript Break, JavaScript Type, JavaScript Forms (API and Validation), JavaScript Objects, JavaScript Functions, JavaScript DOM, JavaScript Browser BOM, JavaScript Frameworks
Introduction to JQuery: JQuery Introduction, JQuery Syntax, JQuery Selectors, JQuery Events, JQuery Effects-JQuery Hide/Show, JQuery Fade, JQuery Slide(), JQuery Animate, JQuery Stop(), JQuery Callback, JQuery Chaining, JQuery AJAX- JQuery AJAX Introduction, JQuery Load, JQuery Get/Post, JQuery HTML, JQuery Get, JQuery Set, JQuery Add, JQuery Remove, JQuery CSS Classes, JQuery css().

[T1][No. of Hrs. 12]

UNIT-III
Bootstrap and PHP: Introduction to Bootstrap: Bootstrap Introduction, Bootstrap Components, Bootstrap Plugins, Bootstrap Grids, BootstrapJS
PHP: PHP Introduction-Installing PHP, PHP Syntax, PHP Variables, PHP Data Types, PHP Strings, PHP Constants, PHP Operators, PHP Programming Loops, PHP Functions, PHP Arrays, PHP Superglobals, PHP Forms and XML-PHP Form Handling, PHP Form Validation (Server side), PHP Required, PHP XML Parsers, PHP Simple XML Parser, PHP Simple XML Get, PHP XML DOM, PHP XML Expat
PHP with Mysql: PHP Mysql Database, PHP Connecting to Database, PHP Creating Records, PHP Selecting Records, PHP Deleting Records, PHP Updating Records, PHP Limit Data, PHP Insert Multiple.
AJAX with PHP: AJAX Introduction, AJAX PHP, AJAX Database, AJAX XML, AJAX Live Search

[T1][No. of Hrs. 11]

UNIT-IV
Introduction of advance concepts
Brief Introduction of concepts: Async and Parallel execution in JavaScript, JavaScript Design Pattern, SPA or Web App's, Data binding, MVC or MVVM Frameworks, Introduction- Backbone and angular Js, GitHub, Node JS, Express & Meteor framework.

[T1][No. of Hrs. 11]

Text Book(s):
[T1]   Jason N. Gaylord, Christian Wenz, Pranav Rastogi, Todd Miranda, Scott Hanselman, Scott Hunter, "Professional ASP.NET using C Sharp", Wrox
[T2]   Semmy Purewal, "Learning Web Application Development", O'Reilly Media
Reference Book(s):
[R1]   Jeffrey Winesett, "Web Application Development with Yii and PHP", Second Edition, Amazon.com
[R2]   Pawel Kozlowski and Peter Bacon Darwin, "Mastering Web Application Development with Angular J.S.", Goodreads 2013

The Scheme and Syllabus for B.Voc (Mobile Communication) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.

NCC/ NSS/ SPORTS/ COMMUNITY SERVICES/ ECO CLUB
(General Elective-II)

		L	T/P	C
Paper Code: ETVSS-751/ 753/ 755/ 757/ 759		**0**	**2**	**1**
Paper: NCC/NSS/ Sports/ Community Services/ ECO Club				

Students should actively participate in either of the above activities of the institute during academic session. Credits shall be awarded accordingly based on final assessment by internal institute committee constituted by the Principal/ Director of the respective institutes. Students are encouraged organize events and awards if any shall be distributed to students during annual day/ specific function day accordingly

The Scheme and Syllabus for B.Voc (Mobile Communication) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.

YOGA
(General Elective-II)

Paper Code: ETVSS-761　　　　　　　　　　　　　　　　　　**L**　**T/P**　**C**
Paper: Yoga　　　　　　　　　　　　　　　　　　　　　　　**0**　**2**　**1**

INSTRUCTIONS TO PAPER SETTERS:　　　　　　　　**MAXIMUM MARKS: 75**
1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Introduction: Yoga education in Schools/Colleges/ Institutions/ Organizations/Universities etc. can immensely contribute to health of children by disseminating knowledge and awareness about the value of health, inculcating and nurturing health promoting habits and life style.

The Paper on YOGA has been initiated by USET for the students in a new skill development programme known as B.Voc programme. Currently, launched in 09 Govt. Institutions affiliated to GGSIP University.

Aim and Objectives:
The aim of the Paper is to introduce Yoga. The specific objectives are:
• To impart Yoga education in schools/colleges/Institutions for prevention of disease and promotion of health;
• To train faculty members in Yogic principles and practices.
• To prepare and distribute standardized Yoga teaching and training materials with reference to institute health.

UNIT-I
❖ Brief introduction to origin of Yoga, Psychological aspects leading to origin of Yoga, Hindu Mythological concepts about origin of Yoga
❖ History and Development of Yoga
❖ Etymology and Definitions of Yoga, Aim and Objectives of Yoga, Misconceptions about Yoga, True Nature of Yoga
❖ General Introduction to Schools of Yoga
❖ Principles of Yoga, Yoga Practices for Health and Harmony

UNIT-II
Yoga Traditions and Classical Schools of Yoga.
❖ Yoga's Traditional Source
❖ Different's traditions of Yoga.
❖ Contemporary Yoga Practice.
❖ Concepts and Practices of Yoga in others religions.

UNIT-III
Experimental Study Yoga:
❖ Aasan, Surya Namaskar, Pranayam, Sukshm-Kriya, Dhyan-Mudra.Shatkarma

UNIT-IV
Yoga and You
❖ **Concept of Health-** Aahaar, Nidra, Bharmacharaya, Viyayaam.
❖ **Aarogya -** Prevention, Cure and Remedies.
❖ Life Management and Development.

Reference Book(s)
[R1]　Singh S. P & Yogi Mukesh, "Foundation of Yoga", Standard Publication, New Delhi, 2010
[R2]　Radhakrishnan S,"Indian Philosophy", (Vol. I & II) II Edition, Oxford University, UK, 2008.
[R3]　Swami Devvarata, "Ashtang Yog", 119, Guttam Nagar.
[R4]　Prof. Ram Harsh Singh, "Swasth Viritam"
[R5]　Swami Prabhavanand, "Spiritual Heritage of India (English)", Sri Ramkrishna Math, Madras, 2004

The Scheme and Syllabus for B.Voc (Mobile Communication) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.

YOGA PRACTICAL
I.A

I. RECITATION OF HYMNS & HASTA MUDRA

1.1 Recitation of Pratah-smaran and Shanti Mantras

1.2 Recitation of Pranava Japa and Soham Japa

1.3 Recitation of Hymns from Upanishad & Yoga Texts

1.4 Hasta Mudra: Chin, Jnana, Hridaya, Bhairav, Yoni

II. SHATKARMA

2.1 Dhauti (Kunjal, Vamana Dhauti, Vastra Dhauti)

2.2 Neti (Jalneti, Sutraneti)

2.3 Kapalbhati and its variants

2.4 Agnisara

III. BREATHING PRACTICES

3.1 Breath Awareness: Shwas-prashwas Sanyaman

3.2 Abdomen, Thoracic & Clavicular Breathing, Abdomen + Thoracic Breathing, Abdomen + Thoracic + Clavicular Breathing

3.3 Yogic Breathing: Pause Breathing (Viloma Pranayama), Spinal Passage Breathing (Sushumna Breathing)

3.4 Practice of Puraka, Rechaka & Kumbhaka (Antar & Bahya Kumbhaka)

YOGA PRACTICAL
I.B

YOGIC SUKSMA AND STHULA VYAYAMA, NABHI PAREEKSHA

1.1 YOGIC SUKSMA VYAYAMA

1. Uccharana-sthalatatha Vishudha-chakra-shuddhi (for throat and voice)
2. Prarthana (Prayer)
3. Buddhi-tatha-dhritishakti-vikasaka (for developing will power)
4. Smaranashakti-vikasaka (for improving the memory)
5. Medhashakti-vikasaka (for improving the intellect and memory)
6. Netrashakti-vikasaka (for the eyes)
7. Kapolashakti-vardhaka (for the cheeks)
8. Karnashakti-vardhaka (for the ears)
9. Grivashakti-vikasaka (for the Neck) (i) (A & B)
10. Grivashakti-vikasaka (for the Neck) (ii) (A & B)
11. Grivashakti-vikasaka (for the Neck) (iii)
12. Skandha-tatha-bahu-mulashakti-vikasaka (for the shoulders)
13. Bhuja-bandhashakti-vikasaka
14. Kohinishakti-vikasaka
15. Bhuja-vallishakti-vikasaka
16. Purna-bhujashakti-vikasaka (for the arms)
17. Mani-bandhashakti-vikasaka
18. Kara-prsthashakti-vikasaka
19. Kara-talashakti-vikasaka
20. Anguli-mulashakti-vikasaka (for the fingers) (A & B)
21. Anguli- shakti-vikasaka (for the fingers) (A & B)
22. Vaksa-sthalashakti-vikasaka (for the chest) (1)
23. Vaksa-sthalashakti-vikasaka (for the chest) (2)
24. Udarashakti-vikasaka (for the abdomen) (i)
25. Udarashakti-vikasaka (for the abdomen) (ii)
26. Udarasakti-vikasaka (for the abdomen) (iii)
27. Udarashakti-vikasaka (for the abdomen) (iv)
28. Udarashakti-vikasaka (for the abdomen) (v)
29. Udarashakti-vikasaka (for the abdomen) (vi)
30. Udarashakti-vikasaka (for the abdomen) (vii)
31. Udarashakti-vikasaka (for the abdomen) (viii)
32. Udarashakti-vikasaka (for the abdomen) (ix)
33. Udarashakti-vikasaka (for the abdomen) (x) (A, B & C)
34. Kati shakti-vikasaka (for the waist) (i)
35. Kati shakti-vikasaka (for the waist) (ii)
36. Kati shakti-vikasaka (for the waist) (iii)

37. Kati shakti-vikasaka (for the waist) (iv)

38. Kati shakti-vikasaka (for the waist) (v)

39. Muladhara-chakra-suddhi (for the rectum)

40. Upasthatatha-svadhisthana-chakra-suddhi (for the genital organs)

41. Kundalinishakti-vikasaka (for the kundalini)

42. Janghashakti-vikasaka (for the thighs) (i) (A & B)

43. Janghashakti-vikasaka (for the thighs) (ii) (A & B)

44. Janushakti-vikasaka (for the knees)

45. Pindalishakti-vikasaka (for the calves)

46. Pada-mulashakti-vikasaka (A & B)

47. Gulpha-pada-pristha-pada-tala-shakti-vikasaka (for the ankles and the feet)

48. Padangulishakti-vikasaka (for the toes)

1.2 YOGIC STHULA VYAYAMA

1. Rekha-gati (Walking in a Straight line)

2. Hrid-gati (Injanadaur – the Locomotive Exercise)

3. Utkurdana (Jumping Exercise)

4. Urdhva-gati (Upward Movement)

5. Sarvanga-pusti (Developing the Entire body) &

1.3 NABHI PAREEKSHA

II. SURYA NAMASKARA

III. YOGASANA (Standing Postures and body alignment)

3.1 Tadasana, Vrikshasana, Urdhva-Hastottanasana, Kati Chakrasana

3.2 ArdhaChakrasana, Paada Hastasana

3.3 Trikonasana, Parshva Konasana

3.4 Veerabhadrasan and its variations

YOGA PRACTICAL
II.A

I. SHATKARMA

1.1 Dhauti

1.2 Neti

1.3 Nauli Madhyama, Vama, Dakshina and Nauli Chalana

1.4 Trataka (Jatru and Jyoti)

II. PRANAYAMA

2.1 Nadi Shodhana (Technique 1: Same Nostril Breathing)

2.2 Nadi Shodhana (Technique 2: Alternate Nostril Breathing)

2.3 Nadi Shodhana (Technique 3: Alternate Nostril Breathing + Antar Kumbhak)

2.4 Nadi Shodhana (Puraka + Antar Kumbhak + Rechaka + Bahya Kumbhak) (1:4:2:2)

2.5 BHRAMARI PRANAYAMA

III. PRACTICES LEADING TO MEDITATION

3.1 Pranav and Soham Japa

3.2 Yoga Nidra (1, 2, 3)

3.3 Antarmauna

3.4 Ajapa Dharana (Stage 1, 2, 3)

YOGA PRACTICAL
II.B

I. YOGASANA (Sitting Postures)

1.1 Dandasana, Swastikasana, Padmasana,Vajrasana, Supta Vajrasana

1.2 Kagasana, Utkatasana, Gomukhasana,Ushtrasana, Shashankasana,

1.3 Janusirasana, Paschimottanasana, Bhramacharyasana, Mandukasana, Utthana Mandukasana

1.4 Vakrasana, Ardha Matsyendrasana, Marichayasana, Simhasana

II. YOGASANA (Supine lying Postures)

    2.1 Pavanamuktasana

    2.2 Utthana-padasana, Ardha Halasana,

    2.3 Halasana

    2.4 Setubandha Sarvangasana

    2.5 Sarvangasana

    2.6 Matsyasana

    2.7 Chakrasana

    2.8 Shavasana

III. YOGASANA (Prone lying Postures)

    3.1 Makarasana

    3.2 Bhujangasana

    3.3 Shalabhasana

    3.4 Dhanurasana

    3.5 Kapotasana

    3.6 Raja Kapotasana

YOGA PRACTICAL
III.A

I. BANDHA

- ❖ Jivha Bandha
- ❖ Jalandhara Bandha
- ❖ Uddiyana Bandha
- ❖ Mula Bandha
- ❖ Maha Bandha
- ❖ Tri Bandha

II PRANAYAMA (with Antar & Bahya Kumbhaka)

2.1 Surya-bhedi and Chandra-bhedi Pranayama

2.2 Ujjayi Pranayama

2.3 Sheetali Pranayama

2.4 Shitkari Pranayama

2.5 Bhastrika Pranayama

III. PRACTICES LEADING TO MEDITATION

3.1 Ajapa Dharana (Stage 4, 5, 6)

3.2 Yoga Nidra (4, 5)

3.3 Practices leading to Breath Meditation

3.4 Practices leading to Om Meditation

3.5 Practices leading to Vipassana Meditation

Practices leading to Preksha Meditation

YOGA PRACTICAL
III.B

I. YOGASANA

   1.1 Siddhasana, Bhadrasana,

   1.2 Baddha Padmasana, Uttitha Padmasana,

   1.3 Bhunamanasana, Hanumanasana

   1.4 Bakasana, Kukkutasana, Garbhasana

   1.5 Matsyendrasana, Marjariasana,

   1.6 Padangusthasana, Hastapadangusthasana

   1.7 Garudasana, Vatayanasana, Natarajasana

   1.8 Mayurasana, Padma Mayurasana

   1.9 Sirshasana and its variations

   1.10 Ekapada and Dwipada Kandarasana

II. MUDRAS

   2.1 Yoga Mudra

   2.2 Maha Mudra

   2.3 Shanmukhi Mudra

   2.4 Shambhavi Mudra

   2.5 Kaki Mudra

   2.6 Tadagi Mudra

   2.7 Vipareet Karni Mudra

   2.8 Simha Mudra

SIGNALS AND SYSTEMS LAB
(Core Elective-II)

	L	T/P	C
Paper Code: ETVMC-755			
Paper: Signals and Systems Lab	0	2	2

Note:- *The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.*

List of Experiments:
1. Introduction to MATLAB and its basic commands.
2. Plot unit step, unit impulse, unit ramp, exponential, parabolic functions and sinusoidal signals
3. Plot the linear convolution of two sequences.
4. Plot the correlation of two sequences.
5. Plot the magnitude and phase spectra of a signal using Fourier transforms.
6. Plot the magnitude and phase spectrum of signal using Fourier series.
7. Find out the Z transform of a signal and check the stability using pole zero location.
8. Plot the spectra of ideally sampled signal w.r.t. sampling of Discrete time signals.
9. Verification of few properties of Fourier transform.
10. Evaluate the DTFS coefficients of a signal and plot them.
11. Plot the step response for any impulse response entered by user.

MOBILE APPLICATION DEVELOPMENT LAB
(Core Elective-II)

Paper Code: ETVMC-757   **L   T/P   C**
Paper: Mobile Application Development Lab   **0   2   2**

Note:- *The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.*

List of Experiments:

1. Develop an application that uses GUI components, Font and Colours.
2. Develop an application that uses Layout Managers and event Listeners.
3. Develop a native calculators application.
4. Write an application that draws basic graphical primitives on the screen.
5. Develop an application that use of Database.
6. Develop an application that makes use of RSS Feed
7. Implement an application that implements multi threading.
8. Develop an native application that uses GPS location information.
9. Implement an application that uses data to the SD card.
10. Implement an application that creates an alert upon receiving a message.
11. Write a mobile application that creates alarm clock.

WEB ENGINEERING LAB
(Core Elective-III)

Paper Code: ETVSD-765   **L**   **T/P**   **C**
Paper: Web Engineering Lab   **0**   **2**   **2**

Note:- *The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.*

List of Experiments:

Web Engineering Lab experiments.

1. Develop and demonstrate FTP server and FTP client (File Zilla)
2. Develop and demonstrate Telnet, HTTP
3. Develop and demonstrate the Search Engine
4. Develop and demonstrate the Configuration of Browsers
5. Demonstrate/ Develop the Apache Web Server
6. Demonstrate/ Develop the Tomcat Web Server
7. Demonstrate/ Develop the IIS Web Server
8. Demonstrate/ Develop the HTML,CSS, Form Controls
9. Demonstrate/ Develop the CGI, PERL
10. Demonstrate/ Develop the XML and XSL
11. Demonstrate/ Develop the Web Services
12. Demonstrate/ Develop the Java Script
13. Demonstrate/ Develop the Ajax
14. Demonstrate/ Develop the Secure Webs
15. Demonstrate/ Develop the Digital Signature

The Scheme and Syllabus for B.Voc (Mobile Communication) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.

WEB APPLICATION AND DEVELOPMENT LAB
(Core Elective-III)

Paper Code: ETVSD-767	**L**	**T/P**	**C**
Paper: Web Application and Development Lab	**0**	**2**	**2**

Note:- *The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.*

List of Experiments:

1. Create a simple HTML Form covering major form elements
2. Create a CSS3 based button
3. Use CSS3 to make an image rounded shape
4. Exercises on animations in CSS
5. Use the Bootstrap grids classes to create this webpage with a sidebar and main content:
6. Use the Bootstrap base CSS classes to add a quote, table, and search form to the page
7. Use the Bootstrap alert component to add a danger alert. Use the thumbnails classes to give the images borders.
8. Exercises on Javascript basics
9. Exercises on Javascript functions
10. Exercises on Javascript arrays
11. Exercises on Javascript Strings
12. Exercises on Javascript Basic Validation
13. Exercises on JQuery Core
14. Exercises on JQuery CSS
15. Exercises on JQuery Events
16. Exercises on PHP
17. Exercise on AJAX with PHP

The Scheme and Syllabus for B.Voc (Mobile Communication) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.

LANGUAGE LAB
(Common to all Disciplines)

Paper Code: ETVHS-751   **L   T/P   C**
Paper: Language Lab   **0   3   3**

Note:- *The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.*

List of Exercises:

1. **Fundamentals of Inter-personal Communication and Building Vocabulary**
   - Self introduction and introducing others
   - Situational Dialogues: Starting a dialogue and responding relevantly & appropriately
   - Role-Play-Expressions in various situations
   - Social and Professional Etiquette: greetings, apologies, requests etc
   - Telephone Etiquette.

2. **Non-verbal Communication**
   - Gesture, posture and body language
   - Facial Expressions.
   - Paralinguistic Skills
   - Proxemics
   - Eye Gaze.
   - Haptics
   - Appearance.

3. **Reading Comprehension and Listening Exercise**
   - General vs Local Comprehension
   - Skimming, Scanning
   - Inference drawing
   - Critical reading
   - Listening , Hearing

4. **Presentation Skills**
   - Oral presentation
   - Seminar/ conference Paper Presentation
   - PPTs and Written presentation through poster/projects/reports/e-mails/assignments etc
   - Camera ready presentation

5. **Group Discussion**
   - Dynamics of Group Discussion
   - Intervention
   - Summarizing
   - Body Language and Voice, Intonation

6. **Interview Skills**
   - Interview etiquette
   - Body posture and body language
   - Voice, intonation and modulation
   - Fluency and organization of ideas
   - Rubrics for evaluation: Concept and process, pre-interview planning, opening strategies, answering techniques,
   - Interview through tele-conferencing and video-conferencing
   - Mock interview
   - Campus placement interview

7. **Public and Professional Speaking**
   - Extempore
   - Public Speech
   - Professional speech/lecture

8. **Articulation and Management**
   - Time management
   - Articulation and expression
   - Assertiveness
   - Psychometrics
   - Stress management

The Scheme and Syllabus for B.Voc (Mobile Communication) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.

WIRELESS COMMUNICATION LAB

		L	T/P	C
Paper Code: ETVMC-751		0	2	2
Paper: Wireless Communication Lab				

Note:- *The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.*

List of Experiments:

Experiments based on MATLAB OR SCILAB

Write a MATLAB/ SCILAB Program/s based on

1. Free space Propagation Model & Frequency Selective Fading Model
2. Ground Reflection (Two-ray) Model
3. Diffraction (Knife-Edge) Model
4. Large-scale Empirical models
5. Small-scale Empirical models
6. Cellular Systems
7. Wireless LANs
8. Wireless Path loss Computations - Study of Propagation Path loss Models : Indoor & Outdoor (Using Matlab Programming)
   a. Free Space Propagation – Path Loss Model
   b. Link Budget Equation for Satellite Communication
   c. Carrier to Noise Ratio in Satellite Communication
   d. Outdoor Propagation – Okumura Model
   e. Outdoor Propagation – Hata Model
9. Experiments based on GSM (Using Wireless Communication Trainer)
   a. Study the implementation of –GMSK modulation, OQPSK detection.
   b. Observe phase response of Tx and Rx and Spectrum of Tx and Rx.
   c. Measure the BER value
   d. GSM AT Commands
10. Experiments based on CDMA (Using Wireless Communication Trainer)
    a. Study the performance of DS-CDMA system under multi-path condition for single user case
    b. Using RAKE receiver with MRC method and EGC method
    c. Observation of SNR vs BER curve for two different combining techniques.

The Scheme and Syllabus for B.Voc (Mobile Communication) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.

EMBEDDED SYSTEMS

		L	T/P	C
Paper Code: ETVMC-702		3	0	3
Paper: Embedded Systems				

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5marks.

Objective: The objective of the paper is to enable a student to design an embedded system for specific tasks.

UNIT-I
Overview of Embedded Systems: Characteristics of Embedded Systems. Comparison of Embedded Systems with general purpose processors. General architecture and functioning of micro controllers. 8051 micro controllers.
PIC Microcontrollers: Architecture, Registers, memory interfacing, interrupts, instructions, programming and peripherals.

[T1][No. of Hrs. 13]

UNIT-II
ARM Processors: Comparison of ARM architecture with PIC micro controller, ARM 7 Data Path, Registers, Memory Organization, Instruction set, Programming, Exception programming, Interrupt Handling, Thumb mode Architecture.
Bus Structure: Time multiplexing, serial, parallel communication bus structure. Bus arbitration, DMA, PCI, AMBA, I2C and SPI Buses.

[T2][No. of Hrs. 12]

UNIT-III
Embedded Software, Concept of Real Time Systems, Software Quality Measurement, Compilers for Embedded System.

[T3][No. of Hrs. 10]

UNIT-IV
RTOS: Embedded Operating Systems, Multi Tasking, Multi Threading, Real-time Operating Systems, RT-Linux introduction, RTOS kernel, Real-Time Scheduling.

[T3][No. of Hrs. 10]

Text Book(s):
[T1]   John B. Peatman, "Design with PIC Microcontrollers", Pearson Education Asia.
[T2]   Andrew N. Sloss, Dominic Symes, Chris Wright, "ARM System Developer's Guide: Designing and Optimizing System Software", Morgan Kaufman Publication.
[T3]   Wayne Wolf, "Computers as Components: Principles of Embedded Computing System Design", Morgan Kaufman Publication.

References Books:
[R1]   Tim Wilmshurst, "The Design of Small-Scale Embedded Systems", Palgrave.
[R2]   Marwedel, Peter, "Embedded System Design", Kluwer Publishers.

The Scheme and Syllabus for B.Voc (Mobile Communication) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.

NETWORK SECURITY

Paper Code: ETVSD- 714	**L**	**T/P**	**C**
Paper: Network Security	**3**	**0**	**3**

INSTRUCTIONS TO PAPER SETTERS:	**MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.

2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective: The objective of the paper is to make the students familiar with the basics of security concepts aspects, of networking. This course focuses on the networking security concepts, cryptography, algorithm, IDS. This is the introductory course on Security. So it requires Computer Network knowledge.

UNIT-I
Introduction to Network Security, Computer Security and Cyber Security. Security Terminologies and Principle, Security Threats, Types of attacks (Operating System, application level, Shrink Wrapcode, Misconfiguration attacks etc.). Introduction to Intrusion, Terminologies, Intrusion Detection System (IDS), Types of Intrusion Detection Systems.

[T1, T2][No. of Hrs. 11]

UNIT-II
Cryptography, Classical Cryptographic Techniques, Encryption, Decryption, Code Breaking: Methodologies, Cryptanalysis, Cryptography Attacks, Brute-Force Attack, Use of Cryptography. Public key cryptography, Principles of Public key Crypto systems, Crypto graphic Algorithms RSA, Data Encryption Standard (DES), RC4, RC5, RC6, Blowfish, Key Management, Diffie-Hellman key exchange, elliptic curve cryptography.

[T1, T2][No. of Hrs. 11]

UNIT-III
Hash Functions, One-way Hash Functions, SHA (Secure Hash Algorithm) Authentication Requirements, Authentication Functions, Kerberos. Message Authentication codes, Message Digest Functions, MD5, SSL (Secure Sockets Layer), SSH (Secure Shell), Algorithms and Security.
Digital Signature: Analysis, Components, Method, Applications, Standard, Algorithm: Signature Generation/ Verification, Digital Certificates.

[T1, T2][No. of Hrs. 11]

UNITIV
Trojans and Backdoors: Overt and Covert Channels, Working, Types (Remote Access Trojans, Data-Sending Trojans, Destructive Trojans, Trojans, Proxy Trojans, FTP Trojans, Security Software Disablers).
Viruses and Worms: Characteristics, Working, Infection Phase, Attack Phase. Sniffers: Definition, Spoofing, Sniffing, Vulnerable Protocols, Types.
Phishing: Methods, Process, Attacks Types (Man-in-the-Middle Attacks, URL Obfuscation Attacks, Hidden Attacks, Client-side Vulnerabilities, Deceptive Phishing, Malware-Based Phishing, DNS Based Phishing, Content-Injection Phishing, Search Engine Phishing).

[T1, T2][No. of Hrs. 12]

Text Books:
[T1] William Stallings, "Cryptography and Network Security: Principles and Practice", Pearson
[T2] Atul Kahate, "Cryptography and Network Security" Mc-Graw Hill

Reference Books:
[R1] Charlie Kaufman, Radia Perlman, Mike Speciner, Michael Speciner, "Network Security Private Communication in a Public World", TMH
[R2] Fourozon, "Cryptography & Network Security", TMH
[R3] Joseph Migga Kizza, "Computer Network Security", Springer International Edition
[R4] Atul Kahate, "Cryptography and Network Security", McGraw Hill
[R5] Carl Endorf, Eugene Schultz, Jim Mell, "Intrusion Detection & Prevention", TMH
[R6] Neal, Krawetz, "Introduction to Network Security", Cengage Learning.

The Scheme and Syllabus for B.Voc (Mobile Communication) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.

ADHOC AND SENSOR NETWORKS
(Core Elective-IV)

		L	T/P	C
Paper Code: ETVMC-706		**3**	**0**	**3**
Paper: Ad Hoc and Sensor Networks				

INSTRUCTIONS TO PAPER SETTERS: MAXIMUM MARKS: 75

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.

2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective: The prerequisites are data communication networks, wireless communication and networks. The objective of the paper is to introduce infrastructure less wireless networking.

UNIT-I
Ad Hoc Wireless Networks: Introduction. Issues in Ad Hoc Wireless Networks. Ad Hoc Wireless Internet.
MAC Protocols for Ad Hoc Wireless Networks: Introduction, Issues in Designing a MAC Protocol for Ad Hoc Wireless Networks. Design Goals of a MAC Protocol for Ad Hoc Wireless Networks. Classifications of MAC Protocols. Contention-Based Protocols. Contention-Based Protocols with Reservation Mechanisms. Contention-Based MAC Protocols with Scheduling Mechanisms. MAC Protocols in Directional Antennas. Other MAC Protocols.
[T1, T2][No. of Hrs. 11]

UNIT-II
Routing Protocols for Ad Hoc Wireless Networks: Introduction to Routing algorithm, Issues in Designing a Routing Protocol for Ad Hoc Wireless Networks. Classifications of Routing Protocols. Table-Driven Routing Protocols. On-Demand Routing Protocols. Hybrid Routing Protocols. Routing Protocols with Efficient Flooding Mechanisms. Hierarchical Routing Protocols. Power-Aware Routing Protocols.
Transport Layer and Security Protocols for Ad Hoc Wireless Networks: Introduction. Issues in Designing a Transport Layer Protocol for Ad Hoc Wireless Networks. Design Goals of a Transport Layer Protocol for Ad Hoc Wireless Networks. Classification of Transport Layer Solutions. TCP Over Ad Hoc Wireless Networks. Other Transport Layer Protocols for Ad Hoc Wireless Networks. Security in Ad Hoc Wireless Networks. Network Security Requirements. Issues and Challenges in Security Provisioning. Network Security Attacks. Key Management. Secure Routing in Ad Hoc Wireless Networks.
[T1, T2][No. of Hrs. 12]

UNIT-III
Wireless Sensor Networks: Introduction. Sensor Network Architecture. Data Dissemination. Data Gathering. MAC Protocols for Sensor Networks. Location Discovery. Quality of a Sensor Network. Evolving Standards. Other Issues.
Hybrid Wireless Networks: Introduction. Next-Generation Hybrid Wireless Architectures. Routing in Hybrid Wireless Networks. Pricing in Multi-Hop Wireless Networks. Power Control Schemes in Hybrid Wireless Networks. Load Balancing in Hybrid Wireless Networks.
[T1, T2][No. of Hrs. 11]

UNIT-IV
Wireless Geolocation Systems: Introduction. What is wireless Geolocation? Wireless Geolocation System Architecture. Technologies for Wireless Geolocation. Geolocation Standards for E-911 Services. Performance Measures for Geolocation Systems. Questions. Problems.
Recent Advances in Wireless Networks: Introduction. Ultra-Wide-Band Radio Communication. Wireless Fidelity Systems. Optical Wireless Networks. The Multimode 802.11 -IEEE 802.11a/b/g. The Meghadoot Architecture, introduction to vehicular sensor networks.
[T1, T2] [No. of Hrs. 11]

Text Book(s):
[T1]   Siva Ram Murthy, C. and Manoj, B. S., Adhoc, "Wireless Networks Architectures and Protocols", 2nd Edition, Prentice Hall, PTR, 2004
[T2]   Perkins, Charles E., "Ad hoc Networking", 3rd Edition, Addison Wesley, 2000

Reference Book(s):

[R1]   Toh, C. K., "Ad hoc Mobile Wireless Networks Protocols and Systems", 3rd Edition Prentice Hall, PTR, (2001)

[R2]   Pahlavan, Kaveh., Krishnamoorthy, Prashant., "Principles of Wireless Networks, - A United Approach", 2nd Edition, Pearson Education, 2002

[R3]   Wang X. and Poor H.V., "Wireless Communication Systems", 3rd Edition, Pearson Education, 2004.

[R4]   Schiller Jochen, "Mobile Communications", 2nd Edition, Pearson Education, 2003

[R5]   Carlos De Morais Cordeiro and Dharam P Agrawal, "Adhoc and Sensor Networks-Theory & Applications", 2nd Edition, Cambridge University Press India Ltd

The Scheme and Syllabus for B.Voc (Mobile Communication) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.

DIGITAL SIGNAL PROCESSING
(Core Elective-IV)

Paper Code: ETVMC-708	**L**	**T/P**	**C**
Paper: Digital Signal Processing	**3**	**0**	**3**

INSTRUCTIONS TO PAPER SETTER: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.

2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 12.5 marks

---

Objectives: The aim of this course is to provide in depth knowledge of various digital signal processing techniques and design of digital filters, learn the concept of DFT FFT algorithms, and design of digital filters using different approximations, DSP processor and architecture. The prerequisites of this subject are basic knowledge of signal and systems.

UNIT-I

Frequency Domain Sampling: The Discrete Fourier Transform, Properties of the DFT, Linear filtering methods based of the DFT.

Efficient computation of the DFT: Principal of FFT, Fast Fourier Transform Algorithms, Applications of FFT Algorithms, A linear filtering approach to computation of the DFT. Application of DFT, Design of Notch filter.

[T1, T2][No. of Hrs: 12]

UNIT-II

Design & Structure of IIR filters from Analog filters: Impulse Invariance; Bilinear transformation and its use in design of Butterworth and Chebyshev IIR Filters; Frequency transformation in Digital Domain, Direct, Cascade, Parallel & transposed structure

[T1, T2][No. of Hrs: 09]

UNIT-III

Design & structure of FIR filters: Symmetric and anti-symmetric FIR filters; Design of Linear Phase FIR filters using windows, Frequency Sampling Method of FIR design, Direct, Cascade, Frequency Sampling, transposed structure

Implementation of Discrete Time Systems:

Lattice structures, Lattice and Lattice-Ladder Structures, Schur - Cohn stability Test for IIR filters;

[T1, T2][No. of Hrs: 14]

UNIT–IV

Quantization Errors in Digital Signal Processing: Representation of numbers, Quantization of filter coefficients, Round-off Effects in digital filters.

Multirate Digital Signal Processing: Decimation, Interpolation, Sampling rate conversion by a rational factor; Frequency domain characterization of Interpolator and Decimator.

[T2][No. of Hrs: 10]

Text Books:
[T1]   Oppenheim & Schafer, "Digital Signal Processing", PHI.
[T2]   Proakis and Manolakis, "Digital Signal Processing", PHI Publication

Reference Books:
[R1]   S. K. Mitra, "Digital Signal Processing", TMH edition 2006
[R2]   Johny R. Johnson, "Introduction to Digital Signal Processing", PHI.
[R3]   R. Babu, "Digital Signal Processing", Sci Tech Publication.

SATELLITE COMMUNICATION
(Core Elective-V)

	L	T/P	C
Paper Code: ETVMC-710	3	0	3
Paper: Satellite Communication			

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objectives: To study the most relevant aspects of satellite communication with emphasis on the most recent application & developments. It covers orbital mechanics, launching techniques, satellite link design, earth& space segment, error control coding and different multiple access techniques.

UNIT-I

Principles of Satellite Communication: Evolution & growth of communication satellite, Satellite frequency allocation & Band spectrum, Advantages of satellite communication, Active & Passive satellite, Applications of satellite communication. Synchronous satellite, Satellite Launch.

Satellite Orbits: Introduction, Kepler's Laws, Newton's law, orbital parameters, orbital perturbations, station keeping, geo stationary and non-Geo-stationary orbits, LEO, MEO, Look Angle Determination- Limits of visibility –eclipse-Sub satellite point –Sun transit outage.

[T1, T2, R1][No. of Hrs. 11]

UNIT-II

Satellite Link Design: Basic transmission, System noise temperature, G/T ratio, design of down links, uplink design, Atmospheric Absorption, Rain induced attenuation.

Space Segment: Power Supply, Altitude Control, Station Keeping, Thermal Control, TT&C sub system, Transponders, Antenna Sub system.

Earth Segment: Subsystem of earth station, Transmit-Receive Earth Station, different types of earth stations, frequency coordination.

[T1, T2, R1][No. of Hrs. 11]

UNIT-III

Multiple Access Techniques: FDMA, FDMA down link analysis. TDMA, Satellite-switched TDMA, code division multiple access, DAMA, On board signal processing for FDMA/TDM Operation.

Error Control for Digital Satellite Links: Error detection and correction for digital satellite links, error control coding, Convolutional codes, satellite links concatenated coding and interleaving, Automatic Repeat Request (ARQ).

[T1, T2, R2][No. of Hrs. 10]

UNIT-IV

Interconnection of Satellite Networks: Interconnection with ISDN, Interconnection of television networks.

Satellite Applications: Satellite mobile services, VSAT, GPS, Radarsat, INMARSAT, Satellite navigational system. Direct broadcast satellites (DBS) - Direct to home Broadcast (DTH), World Space Services, Business TV (BTV).

[T1, R2, R3][No. of Hrs. 10]

Text Book(s):
[T1]   Dennis Roddy, "Satellite Communication", McGraw Hill International.
[T2]   T. Pratt, "Satellite Communication", John Willy and Sons (Asia) Pvt. Ltd.

Reference Books:
[R1]   T. Ha, "Digital Satellite Communication", McGraw Hill.
[R2]   Bruce R. Elbert, "The Satellite Communication Applications Handbook", Artech House Boston.
[R3]   Mark R. Chartrend, "Satellite Communication" Cengage Learning
[R4]   Handbook of Satellite Communication, Wiley.

The Scheme and Syllabus for B.Voc (Mobile Communication) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.

INTERNET OF THINGS
(Core Elective-V)

Paper Code: ETVMC-712	**L**	**T/P**	**C**
Paper: Internet of Things	**3**	**0**	**3**

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objectives: *Should have Vision and Introduction to IoT. Understand IoT Market perspective. Data and Knowledge Management and use of Devices in IoT Technology. Understand State of the Art – IoT Architecture. Real World IoT Design Constraints, Industrial Automation and Commercial Building Automation in IoT.*

UNIT-I
Machine to Machine (M2M) to IoT-The Vision Introduction, From M2M to IoT, M2M towards IoT the global context, A use case example, Differing Characteristics.M2M to IoT – A Market Perspective– Introduction, Some Definitions, M2M Value Chains, IoT Value Chains.
                                                            [T1, R1, R2][No. of Hrs. 10]

UNIT-II
An emerging industrial structure for IoT. The international driven global value chain and global information monopolies. M2M to IoT An Architectural Overview– Building an architecture, Main design principles and needed capabilities, An IoT architecture outline, standards considerations.M2M and IoT Technology Fundamentals Devices and gateways, Local and Wide Area Networking, Data management, Business processes in IoT, Everything as a Service (XaaS), M2M and IoT Analytics, Knowledge Management.
                                                            [T1, R1, R2][No. of Hrs. 13]

UNIT- III
IoT Architecture State of the Art – Introduction, State of the art, Architecture Reference Model Introduction, Reference Model and architecture, IoT reference Model IoT Reference Architecture Introduction, Functional View, Information View, Deployment and Operational View, Other Relevant architectural views.
                                                            [T1, R1, R2][No. of Hrs. 09]

UNIT-IV
Real World Design Constraints Introduction, Technical Design constraints hardware is popular again, Data representation and visualization, Interaction and remote control. Industrial Automation Service oriented architecture based device integration,
SOCRADES: Realizing the enterprise integrated Web of Things, IMCAESOP: from the Web of Things to the Cloud of Things, Commercial Building Automation Introduction,
Case Study: Phase one commercial building automation today, Case study: Phase two commercial building automation in the future.
                                                            [T1, R1, R2][No. of Hrs. 13]

Text Books:
[T1]   Jan Holler, Vlasios Tsiatsis, Catherine Mulligan, Stefan Aves and Stamatis Karnouskos, David Boyle, "From Machine to Machine to the Internet of Things: Introduction to a New Age of Intelligence", 1st Edition,

Reference Books:
[R1]   Vijay Madisetti and Arshdeep Bahga, "Internet of Things (A Handson Approach)", 1st Edition, VPT, 2014.
[R2]   Francis DaCosta, "Rethinking the Internet of Things: A Scalable Approach to Connecting Everything", 1st Edition, Apress Publications, 2013

TELECOM SERVICE MANAGEMENT

		L	T/P	C
Paper Code: ETVMC 714   **Paper: Telecom Service Management**   3   0   3

Paper Code: ETVMC 714　　　　　　　　　　　　　　　　L　　T/P　C
Paper: Telecom Service Management　　　　　　　　3　　0　　3

INSTRUCTIONS TO PAPER SETTERS:　　　　　　　**MAXIMUM MARKS: 75**
1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 12.5 marks.

Objective: To give sufficient knowledge of the role of a manager in telecom sector. To introduce the students to concepts of operations management, project management, marketing and general management.

UNIT-I
Telecom Technologies: Global Trends in telecommunication developments and Technological obsolescence, Convergence of services and technologies.
Telecom Network Components: Switch/routers, Backbone links and Gateways, etc.
Telecom Services: Modern Trends, Type of services, Universal Service Obligation (USO) and Universal Access Obligation (UAO), Millennium Development Goals in Telecom Sector: Service Penetrations.
[T1, T2] [No. of Hrs. 12]

UNIT-II
Operation Management: Network availability, Network Performance Indicators, Development of Efficiency Indicators for Operators, Divisions/Departments and Section/offices; Safety and Maintenance of Telecom Networks, Fault analysis, typical fault rates of network components, Spares dimensioning basis, Inventory Management. Management Information System (MIS): Objectives and Key indicators.
[T1, T2][No. of Hrs. 11]

UNIT-III
Project Management: Concept of project planning and management and processes, Recent project planning approaches, Project cycle, Linkages between Plans/ Programs and projects, Project feasibility study – demand/need forecasting and analysis, technical analysis, financial analysis (NPV, ROI, IRR), economic analysis, social analysis, environmental analysis, Project planning matrix- logical framework, project appraisal and screening, Risk and uncertainty analysis and management, Project negotiation, Project organization, Project implementation plan (PERT, CPM, Network diagram, Gantt Chart).
[T1, T2] [No. of Hrs. 11]

UNIT- IV
Marketing Management: Role of marketing in service industries, marketing strategies – product/service strategies, pricing strategies, place strategies, promotion strategies. Demand /supply forecasting, market survey, pricing of NT, Marketing management issues and challenges of NT Ratios.
[T1, T2] [No. of Hrs. 11]

Text Book(s):
[T1]　Harold Kernzer, "Telecom Project Management", Wiley, 2nd Edition
[T2]　Scott Berkun, "The Art of Project Management", Tata McGraw Hill Publication.

Reference Book(s):
[R1]　Harold Kernzer, "Project Management-Case Studies", Wiley, 5th Edition.
[R2]　Harold Kernzer, "Project Recovery: Case Studies and Techniques for Overcoming Project Failure", Wiley

The Scheme and Syllabus for B.Voc (Mobile Communication) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.

ADHOC AND SENSOR NETWORKS LAB
(Core Elective-IV)

Paper Code: ETVMC-756   **L**   **T/P**   **C**
Paper: Ad Hoc and Sensor Networks Lab   **0**   **2**   **2**

Note:- *The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.*

List of Experiments:

1. Drawing a wireless coverage map and measurements (cross validation through various measurement techniques, GPS, encounters, etc.)
2. Encounter based networks (discovering devices, building ad hoc net, increasing the coverage of the wireless net, using static or mobile nodes, etc.)
3. The 'socializer' experiments: establishing friendship and interest group links in mobile societies (through analysis of traces, mobile device experiments, surveys, etc.)
4. Simulation of disaster scenarios and establishment of networks for the relief and search/rescue missions.
5. Demonstration of Send& Receive, Wireless network sensing
6. Demonstration of Remote event sensing & Recitation of wireless network sensing
7. Study to simulate a mobile ad hoc network using ns-2.
8. To study the mechanisms for implementing security and trust mechanisms in MANETs and WSNs.
9. To study the basic mobile ad hoc or wireless sensor network via simulations or programming of PDAs.
10. To study the limitations of wireless sensor networks and the work abounds needed to develop real-life Applications
11. To study the application layer support for wireless sensor implementations.

The Scheme and Syllabus for B.Voc (Mobile Communication) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.

DIGITAL SIGNAL PROCESSING LAB
(Core Elective-IV)

		L	T/P	C
Paper Code: ETVMC-758		0	2	2
Paper: Digital Signal Processing Lab				

Note:- *The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.*

List of Experiments:

Software Experiments:
1. Generation of basic signals sine, cosine, ramp, step, impulse and exponential in continuous and discrete domains using user defined functions.
2. Write a MATLAB program to find convolution (linear/circular) and correlation of two discrete signals.
3. Perform linear convolution using circular convolution and vice versa.
4. Write a MATLAB program to
    a. Find 8 point DFT, its magnitude and phase plot and inverse DFT.
    b. Find 16 point DFT, its magnitude and phase plot and inverse DFT.
5. Perform the following properties of DFT-
    a. Circular shift of a sequence.
    b. Circular fold of a sequence.
6. Write a MATLAB Program to design FIR Low pass filter using
    a. Rectangular window
    b. Hanning window
    c. Hamming window
    d. Bartlett window
7. Write a MATLAB program to
    a. Implement a Low pass / High pass / Band pass / Band stop IIR Filter using Butterworth Approximation.
    b. Implement a Low pass / High pass / Band pass / Band stop IIR Filter using Chebyshev Approximation.

Hardware Experiments using Texas Instruments Kits-DSK 6713:
8. Introduction to Code composer Studio.
9. Write a program to generate a sine wave and see the output on CRO
10. Write a Program to Generate ECHO to give audio file.
11. Write a program to demonstrate Band Stop filter by FIR.

Additional Experiments:
12. Write a program to generate a cos wave and see the output on CRO
13. Write a program to blink the LED
14. Write a program to display a string on LCD.

EMBEDDED SYSTEMS LAB

Paper Code: ETVMC-752   **L   T/P   C**
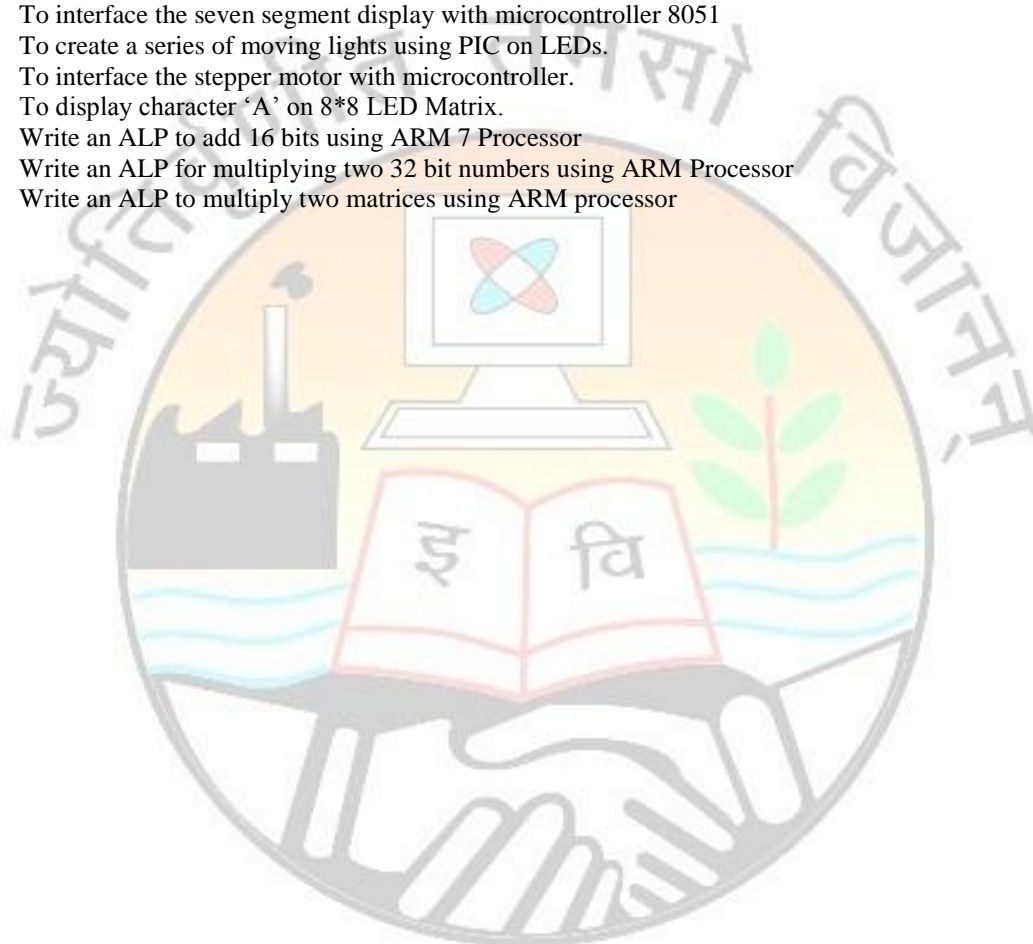**Paper: Embedded Systems Lab**   **0   2   2**

Note:- *The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.*

List of Experiments:

1. Introduction to microcontroller and interfacing modules.
2. To interface the seven segment display with microcontroller 8051
3. To create a series of moving lights using PIC on LEDs.
4. To interface the stepper motor with microcontroller.
5. To display character 'A' on 8*8 LED Matrix.
6. Write an ALP to add 16 bits using ARM 7 Processor
7. Write an ALP for multiplying two 32 bit numbers using ARM Processor
8. Write an ALP to multiply two matrices using ARM processor

The Scheme and Syllabus for B.Voc (Mobile Communication) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.

NETWORK SECURITY LAB

		L	T/P	C
Paper Code: ETVSD-764		0	2	2
Paper: Network Security Lab				

Note:- *The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.*

List of Experiments:

1. Scanning for vulnerabilities using any one of the Open Source Software like AngryIP,HPing2,IPScanner,Global Network Inventory Scanner.
2. Net BIOS Enumeration Using any one Tool like Net View Tool, Nbtstat Enumeration Tool (Open Source).
3. Steganography using any one tool like Merge Streams, Image Hide,
4. Steganalysis using any of the tools Stego Watch-Stego Detection Tool, Steg Spy.
5. How to Detect Trojans by using –Netstat, fPort, TCPView, CurrPorts Tool, Process Viewer.
6. Lan Scanner using look@ LAN, wireshark.
7. Understanding DoS Attack Tool (any two)- Jolt2,Bubonic.c,LandandLaTierra,Targa,NemesyBlast
8. Understanding of any two tools-Panther2, Crazy Pinger, Some Trouble, UDP Flood, FSMax.

The Scheme and Syllabus for B.Voc (Mobile Communication) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.