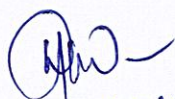



Guidelines for conducting practicals of
VII Sem (ETC/EC/EX)

MIXED SIGNAL DESIGN LAB
LIST OF EXPERIMENTS

S.NO.	NAME OF EXPERIMENTS
1	Design of Common mode feedback circuits.
2	Design of switched capacitor circuits.
3	Design of High Speed Comparator.
4	Design of High Gain Comparator.
5	Design of first order filters.
6	Design of full wave rectifier.
7	Design of sinusoidal oscillator.
8	Design of Ring oscillator.
9	Design of PLL.
10	Design of ADC.
11	Design of DAC.
12	Mini project


(Dr. P. D. Khandait)
03/08/23



(Dr. V. K. Talekar)
03/08/23



DATA SCIENCE LAB
LIST OF EXPERIMENTS

S.NO.	NAME OF EXPERIMENTS
1	Download, Install And Explore The Features Of Numpy, Scipy, Jupyter, Stats Models And Pandas Packages.
2	Working With Numpy Arrays
3	Working with Pandas data frames
4	Implementation of various Data Sampling Methods using Python.
5	Reading data from text files, Excel and the web and exploring various commands for doing descriptive analytics on the Iris data set.
6	Implementation of Classification and Clustering of data using Python.
7	Use the diabetes data set from UCI and Pima Indians Diabetes data set for performing the following: a. Univariate analysis: Frequency, Mean, Median, Mode, Variance, Standard Deviation, Skewness and Kurtosis. b. Bivariate analysis: Linear and logistic regression modeling c. Multiple Regression analysis d. Also compare the results of the above analysis for the two data sets
8	Apply and explore various plotting functions on UCI data sets. a. Normal curves b. Density and contour plots c. Correlation and scatter plots d. Histograms e. Three dimensional plotting

9	Visualizing Geographic Data with Basemap



 (Dr. P. D. Khondair)
 03/08/23


 (Dr. V. K. Takwande)
 03/08/23



MICROWAVE AND RADAR ENGINEERING
LIST OF EXPERIMENTS

S.NO.	NAME OF EXPERIMENTS
1	To study the various components used at UHF & Microwaves Frequency Range and to study the basic set up for generation of Microwave Power.
2	a. To study the characteristics of Reflex Klystron and to determine its Electronics Tuning Range. b. To observe different modes of Reflex Klystron on CRO.
3	a. To study various Microwave Tees i.e. E-Plane Tee, H-Plane Tee and E-H plane Tee. b. To measure VSWR of E-Plane Tee or H-Plane Tee.
4	To demonstrate the relationship between Frequency, Wavelength in Free Space and Guide Wavelength.
5	To measure coupling and directivity of multihole directional coupler.
6	To study V-I characteristics of Gunn Diode.
7	Study of different tracking Radar System. (Monopulse/ Conical Scan/ Pulse Swapping Radar)
8	Study of Pulse Radar System.
9	To plot the radiation pattern of Horn Antenna and calculate its Antenna Gain.
10	Verification of port characteristics of Microwave Tees using FEKO software.


 (Dr. P. D. Khandait)
 03/08/23



 (Dr. V. K. Takasane)
 03/08/23




PLC AND SCADA LAB

LIST OF EXPERIMENTS

S.NO.	NAME OF EXPERIMENTS
1	Introduction to PLC trainer & its installation with PC
2	Write and implement a simple ladder logic program using digital inputs and outputs for PLC.
3	Write and implementation of simple ladder logic program using timer 1) On delay timer 2) Off delay timer 3) Retentive timer
4	Write and implementation of simple ladder logic program using counter. 1) UP counter 2) Down counter
5	Write program on MOVE, control statement, math function, data manipulation technique on PLC.
6	To study about conveyor control system using PLC
7	Write and implement ladder logic program to on-off the DC motor using PLC
8	To study the traffic light controller system by using PLC
9	Interface SCADA with PLC and associate tags with memory and I/ O and operate the PLC inputs through the switch symbol from the computer screen and view the status of the outputs using lamp and motor graphics symbols in the screen.



(Dr. P. D. Khandait)
03/08/23


(Dr. V. R. Takasande)
3/8/23

AUDIO AND VIDEO ENGINEERING LAB

LIST OF EXPERIMENTS

S.NO.	NAME OF EXPERIMENTS
1	To study and understand TV Receiver block diagram and analyze and synthesize TV pictures.
2	To study and understand the color composite video signal.
3	To study and understand the different patterns with the help of pattern generator.
4	To study and understand the vertical and horizontal section & measure the voltage at different test points.
5	To study and understand the VIF and SIF section & measure the voltage at different test points.
6	To study and understand different TV receiver picture tube.
7	To study and understand various faults and troubleshooting of color TV.
8	To study and understand digital TV satellite system.
9	Understanding principle of LED TV and its comparison with LCD TV.
10	Installation of satellite dish antenna for the reception of TV channels.


(Dr. P. D. Khandait)
03/08/23



Dr. V. K. Takhar
03/08/23




WEB TECHNOLOGY LAB

LIST OF EXPERIMENTS

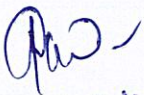
Program No.	Details
1	Write a JavaScript to design a simple calculator to perform the following operations: sum, product, difference and quotient.
2	Write a JavaScript that calculates the squares and cubes of the numbers from 0 to 10 and outputs HTML text that displays the resulting values in an HTML table format.
3	Write a JavaScript code that displays text "TEXT-GROWING" with increasing font size in the interval of 100ms in RED COLOR, when the font size reaches 50pt it displays "TEXT-SHRINKING" in BLUE color. Then the font size decreases to 5pt.
4	Develop and demonstrate a HTML5 file that includes JavaScript script that uses functions for the following problems: a. Parameter: A string b. Output: The position in the string of the left-most vowel c. Parameter: A number d. Output: The number with its digits in the reverse order
5	Design an XML document to store information about a student in an engineering college affiliated to VTU. The information must include USN, Name, and Name of the College, Branch, Year of Joining, and email id. Make up sample data for 3 students. Create a CSS style sheet and use it to display the document
6	Write a PHP program to keep track of the number of visitors visiting the web page and to display this count of visitors, with proper headings.
7	Write a PHP program to display a digital clock which displays the current time of the server.
8	Write the PHP programs to do the following: a. Implement simple calculator operations. b. Find the transpose of a matrix. c. Multiplication of two matrices. d. Addition of two matrices.


(Dr. P. D. Khandarkar)
03/08/23


(Dr. V. K. Takasande)
03/08/23



10	To study various AT Commands on 4G kit and understand its usages, different User Interface features
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(Dr. D. J. Chaudhari)
03/08/23


(Dr. V. K. Takrekar)
03/08/23 

WIRELESS AND MOBILE COMMUNICATION LAB

LIST OF EXPERIMENTS

Program No.	Details
1	Understanding Cellular Fundamentals like Frequency Reuse, Architecture, Interference, Path Environment, Coverage and Capacity using wireless
2	Knowing GSM and CDMA Network concepts like Call Management, Call Setup, call release, Handover, GSM Security and Power Control, Handoff Process, Rake Receiver, Capacity of CDMA using wireless communication software
3	Study of GSM handset for various signalling conditions, to study transmitters and receiver section in mobile handset and measure frequency band signal and GMSK signal by observing signals at different test points
4	To study and observe system blocks/ sections in GSM handset like: clock, SIM card, charging, LCD module, Keyboard, UI (User interface circuit) and observe the effect of fault insertion techniques.
5	To study various GSM AT Commands and understand its usages, different UI features, Understating of 3G Communication System with features like; transmission of voice and video calls, SMS, MMS, TCP/IP, HTTP, GPS and File system in 3G network.
6	To learn and develop concepts of AT command using Proteus software: <ul style="list-style-type: none"> • Interface GSM 900 modem to serial monitor and get the output of commands • Interface GSM 900 modem to Arduino and make communication between them and see the output of serial monitor and see the output of different commands • Interface GSM 900 modem ro serial monitor and perform the send & received SMS command
7	Study of direct sequence spread spectrum (DSSS) technique for CDMA, observe effect on performance of CDMA with variation of types of PN codes, chip rate, spreading factor, processing gain.
8	To design any one of the following using GNU radio: <ul style="list-style-type: none"> • Implementation of AM Transmitter and Receiver • Implementation of Narrow band FM Transmitter and Receiver • Implementation of SSB Transmitter and Receiver • Implementation of BPSK transmitter and Receiver • Design of Low pass filter with particular cut off frequency • Design of high pass filter with particular cut off frequency • Design of band pass filter with two different cut off frequencies
9	To Study 4G kit and its different sections in detail and observe the effect of fault insertion techniques.

SUBJECT: ROBOTICS AND AUTOMATION PRACTICAL: 2 Hrs/Week.


LIST OF EXPERIMENTS:

- (1) To study an introduction to Robot configuration.
- (2) Study of ROBOT With 2DOF, 3DOF & 4DOF.
- (3) To study the Robot programming for industrial applications.
- (4) To study the Robot programming application in VAL II.
- (5) To perform the Robot programming exercise for Pick and Place operation.
- (6) Introduction and general considerations in robot applications.
- (7) Case study I: Robot application for Welding.
- (8) Case study II: Robot application for Spray painting.
- (9) To study the Robot path planning using Robotic simulation software.

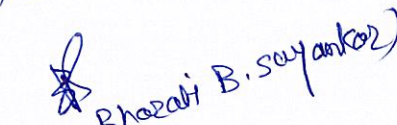



(Dr. V. K. Takshande)


(Dr. P. D. Khondair)


(Dr. S. S. Khade)


(Dr. B. M. Harode)


(Dr. Bhazani B. Sayankar)