DEPARTMENT OF ELECTRONICS

BOS

Board of Studies
Proceedings

Academic year 2015-16 to 2019-20

Meeting Notice

THE NATIONAL COLLEGE BASAVANAGUDI, BANGALORE-560 004

[AUTONOMOUS]

DEPARTMENT OF ELECTRONICS

Date: 10-06-2019

To

Dear Sir/Madam,

Sub: Meeting of the Board of Studies in Electronics

  I thank you sincerely for having been kind enough to accept our invitation to be a member of Board of Studies in Electronics. With your guidance, we would achieve most of our academic goals. Keeping this in view, I reiterate my request to you to be a member of the BOS and be the guiding spirit in our academic activities during the academic year 2018-19.

  I take pleasure informing you that the Board of Studies Meeting in Electronics is scheduled to be held **on 13th June 2019(Thursday) at 10-30 A.M.** in the Department of Electronics, The National Degree College [Autonomous], Basavanagudi, Bangalore-04 to discuss III and IV Semester Syllabi.

  I request you to make it convenient to attend the meeting.

  We look forward to your august presence in the meeting.
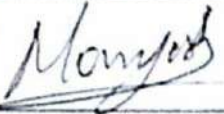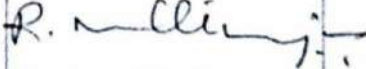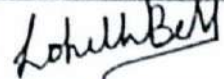
Thanking you,

Yours sincerely,
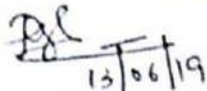
Smt. Poornima Hegde
Head of the Department

Member Present signature list

THE NATIONAL COLLEGE
BASAVANAGUDI, BANGALORE-560 004
[AUTONOMOUS]
DEPARTMENT OF ELECTRONICS

MEETING of the Board of Studies in Electronics held on Thursday 13-06-2019 at 2.00 pm

Approval of 3rd and 4th Semester B.Sc. Electronics syllabus for CBCS pattern:

Sl. No.	Name and designation of the Member	Signature
1	Dr. Jyothi, Professor, Department of Electronics Govt. Science College, Bangalore.	
2	Dr. Manjesh, Professor, Department of electronic Science, J.B.Campus, Bangalore University, Bangaore-560 056.	
3	Prof. R. Mallikarjuna Setty, Associate Professor H.O.D. of Electronics, Vijaya College, Baavanagudi, Bangalore- 560 004.	
4	Mr. Lohit. B.N.(AST) TCS, Bangalore	
5	Mrs. Ramya.M Department of Electronics, The National College, Basavanagudi, Bangalore- 560 004.	
6	Prof. Poornima Hegde, H.O.D of Electronics, The National College, Basavanagudi, Bangalore- 560 004.	13/06/19

Proceedings

DEPARTMENT OF ELECTRONICS

Board of Studies Meeting (UG Electronics) held on 13-06-2019
Report:

Members Present:

1. Dr. Jyothi, Professor, Dept of Electronics, Government Science College, Bangalore
2. Dr. Manjesh, Dept. Of Electronics Science, Jnana Bharathi Campus, Bangalore University, Bangalore- 560 056.
3. Prof. R. Mallikarjuna Shetty H.O.D. of Electronics Vijaya Degree College. Basavanagudi, Bangalore-560 004.
4. Mr. Lohit, Engineer, TCS, Bangalore.
5. Poornima Hegde, H.O.D of Electronics National Degree College (Autonomous) Basavanagudi, Bangalore-560 004.
6. Ramya M, Lecturer, National Degree College (Autonomous) Basavanagudi, Bangalore- 560 004.

Agenda:

1. Proceeding of previous BOS meeting.
2. Performance of the students in Previous semesters in Autonomous syllabi.
3. The syllabus for III and V semester courses in Electronics.
4. Any other subject (related to Electronics syllabus).

Proceedings:

1. Prof. Poornima Hegde, HOD of Electronics, NCB welcome all the members of the BOS. She was happy to inform all the members about MOU with the Texas and also introducing the IEEE students Chapter in the college.
2. She also mentioned about the Texas Innovative Lab which is set up in our college. She also assured the members to have a FDP program on the same for the faculties from other institutions
3. The Committee first discussed about the performance of the students in the previous semesters of the course and the difficulties in teaching the same. The members were satisfied with the performance of the students and appreciated the performance of the teachers in teaching the subjects.

4. The committee next discussed the syllabi of III and IV semester of the course in Electronics.
5. Dr. Manjesh, Professor of Bangalore University suggested the following changes.
   i. Suggested to introduce all digital electronics portions in a single semester.
   ii. As far as possible avoid multiple topics.
   iii. Change the paper title for 3rd Semester as Advance Electronics-1
   iv. Change the paper title for 4th Semester as Advance Electronics-2.
6. Dr. Jyothi, Professor, Dept of Electronics, Government Science College also suggested the above changes and she also suggested
   i. To conduct FDP program in IOT for & days
   ii. To refer Mysore University paper for interdisciplinary course
   iii. To conduct surprise tests on electronic circuits relevant to practical's.
   iv. To engage the alumni to strengthen the department.

7. Prof Mallikarjun Shetty HOD of Electronics in Vijaya College suggested the following changes.
   i. To change the titles of the papers to Advanced Electronics 1 and 2 for 3rd and 4th Semester respectively with the specifications.
   ii. To mention that interdciplinary papers must be handled by only Electronics faculties
   iii. Include digital experiments.
8. The discussion was very fruitful and helpful for us to make teaching of electronics more effective.
9. All the suggestions were considered, and respective changes have been made.

With above suggestions the syllabi for B.Sc. III and IV semester courses in Electronics was accepted by the Board of Studies.

HOD of Electronics

SEM	PAPER	TITLE	HRS	IA	EXAM	TOTAL	CREDITS
I	ELE T1	Basic electronics-I	4	30	70	100	4
	Practical-L1	Lab in Basic Electronics -I	3	15	35	50	1
II	ELE T2	Basic electronics-II	4	30	70	100	4
	Practical L2	Lab in Basic Electronics -II	3	15	35	50	4
III	ELT3	Advanced electronics-I (digital electronics, nanoelectronics and c programming)	4	30	70	100	4
	Practical L3	Digital Electronics and C programming	3	15	35	50	1
IV	ELT4	Advanced electronics-II (microcontroller 8051 with embedded c and mems)	4	30	70	100	4
	Practical L4	8051 programming	3	15	35	50	1
V	ELT5	Communication	3	30	70	100	
	ELT6	Verilog and instrumentation	3	15	35	50	
	Practical L5	Lab in Communication	3	30	70	100	
	Practical L6	Lab in Verilog Programming	3	15	35	50	
VI	ELT7	Semiconductor Devices and Nano Technology	3	30	70	100	
	ELT8	Signals & systems	3	15	35	50	
	Practical L7	Lab in microwave and optical fibre	3	30	70	100	
	Practical L8	MATLAB programming	3	15	35	50	

Approved Syllabus Abstract
III Semester (2019_20 onwards)
ELT3: Advanced Electronics-I
(Digital Electronics, Nanoelectronics and C Programming)

Total Hours: 54 hrs

Objective: To enhance the knowledge in Electronics
Outcome: After studying this paper the students will be able to design the logical circuits for sequential circuits, write the codes using C programming and gets the knowledge about nano materials and its synthesis mechanism and characterization techniques.

Module 1: Sequential Logic Circuits: **12 hrs**
- Flip-flops
- Registers
- Counters
- D to A conversion
- A to D conversion

Module 2:   **13hrs**
- Basics of Programming: Algorithm, flowchart and pseudo code.
- Introduction to C
- I/O statements
- Control Structures
- Arrays

Module 3:   **12 hrs**
- Functions
- Pointers
- Structures, Unions and macros.

Module 4:   **17hrs**
- **Introduction to nanomaterials:**
  - Various kind of Nanostructure electronics devices:
  - Preparation methods: Bottom-up synthesis – Top-down synthesis:
- **Synthesis of Nanomaterials:** PVD, CVD, Nucleation and Growth, ALD, Epitaxy, MBE.
- **Characterization techniques of nanomaterials:**
  - Introduction, structural characterization: X-ray diffraction, scanning electron microscopy (SEM), transmission electron microscopy including high resolution imaging (TEM), scanning probe microscopy (SPM) – principle of operation, instrumentation and probes, Atomic force microscopy (AFM)

TEXTBOOKS:
1. Digital Fundamentals: Floyd-UBS publishers.
2. Solid state electronic devices – Sixth edition by Ben G Streetman, Sanjay Kumar Banerjee.
3. Nanostructures and Nanomaterials: Synthesis, Properties and Applications by Guozhong Cao, Imperial College Press, London, 2004.
4. Let us C by Yeshwant Kanetkar
5. The C Programming Language: Balagurusamy.

REFERENCE BOOKS:
1. Electronic Principles: A.P. MALVINO-TMH 5th edition.
2. Silicon VLSI Technology, Plummer, Deal , Griffin ,Pearson Education India.
3. Encyclopaedia of Materials Characterization, Edited by: Brundle, C.Richard; Evans, Charles A. Jr.;Wilson, Shaun ; Elsevier.
4. Introduction to nano electronics – Vladimir V. Mitin
5. The C programming Language: B.W. kerningham and D. M. Ritchie,   prentice Hall of India.
6. C Programming (Schaum series)

Practical-L3
Digital Electronics and C programming
PART-A
Digital Electronics
(Any 5 experiments)

1. Decimal to BCD Priority encoder and BCD to Decimal Decoder.
2. BCD to seven segment conversion using IC 7447.
3. Study of Multiplexer using IC 74150 and De-Multiplexer using IC 74154.
4. Unclocked and Clocked SR Flip-Flop.
5. J-K Flip-flop and conversion to D and T flip flop using IC 7476.
6. Four-bit binary ripple counter using IC 7476.
7. Johnson/Ring Counter.
8. Shift Registers

PART-B C
programming

1. Printing the reverse of an integer and a string.
2. Printing the odd and even series of N numbers.
3. Get a string and convert the lowercase to uppercase and vice--versa using *getchar ()* and *putchar ()*.
4. Finding the occurrence of a particular character in a string.
5. Input a string and find the number of each of the vowels appear in the string.
6. Accept N words and make it as a sentence by inserting blank spaces and a full stop at the end.
7. Checking whether the given matrix is an identity matrix or not.
8. Finding the first N terms of Fibonacci series.
9. Declare 3 pointer variables to store a character, a character string and an integer respectively. Input values into these variables. Display the address and the contents of each variable.
10. Recursive program to find the factorial of an integer.
11. Finding the maximum of 4 numbers by defining a macro for the maximum of two numbers.
12. Define a structure with three members and display the same.
13. Declare a union with three members of type integer, char, string and illustrate the use of union.

ELT4: Advanced Electronics-II
(Microcontroller 8051 with Embedded C and MEMS)

Total Hours: 54 hrs

Objective: To strengthen the knowledge in application of Electronics
Outcome: After studying this paper the students will be able to understand the application of digital electronics and be able to write the codes for microcontroller using assembly level language as well as embedded C. Students will get the knowledge of MEMS technology in the research area.

Module 1: Introduction to Microcontrollers: 13 hrs
- The 8051 Architecture:
- External memory- Connecting external memory
- Counters and Timers- Timer Counter Interrupts, Timing, Counting

Module 2: Addressing Modes and Instructions Sets: 14 hrs
- External data Moves, Code Memory, Read Only Data Moves / Indexed Addressing mode, PUSH and POP Opcodes, Data exchanges,
- Byte level logical Operations, Bit level Logical Operations, Rotate and Swap Operations, Arithmetic Operations: .
- Jump and Call Instructions: Interrupts and Returns,

Module 3: 8051 programming in C 13 hrs
- Data types and time delays in 8051C, I/O programming, logic operations, data conversion programs, accessing code ROM space, data serialization.
- Programming 8051 Timers, Counter Programming,
- Interrupts Programming:
- Programming serial data transfer,
- Interfacing with 8051: Interfacing 8051 to LCD, Keyboard, ADC, DAC, Stepper motor.

Module 4: Introduction to MEMS 14 hrs
- System on Chip, Scale of integration, next generation MEMS, Applications. Microsensors, Micro actuators and microelectronics fabrication.
- Introduction to Microfabrication Techniques:
- Thermal Sensors and Actuators:
- Micro-opto-electromechanical Systems:
- Radio Frequency (RF) MEMS:

TEXTBOOKS:
1. Kenneth J. Ayala ; "The 8051 Microcontroller Architecture, Programming & Applications" 2e, Penram International, 1996 / Thomson Learning 2005.
2. Muhammad Ali Mazidi and Janice Gillespie Mazidi and Rollin D.McKinlay; "The 8051 Microcontroller and Embedded Systems – using assembly and C "- PHI, 2006 / Pearson, 2006
3. "MEMS" by Nitaigour Premachand Mahalik, Tata McGraw Hill Education Private
4. Limites, New Delhi.

REFERENCE BOOKS:
1. Ajay V.Deshmukh; "Microcontrollers- Theory and Applications",TMH,2005.
2. Predko ; "Programming and Customizing the 8051 Microcontroller" –, TMH
3. "Introduction to Microelectromechanical Microwave Systems, Second Edition",
4. Hector J. De Los Santos, Artech House, 2004.
5. "RF MEMS Circuit Design for Wireless Applications", Hector J. De Los Santos,
6. Artech House, 2002.
7. Plasma techniques for film deposition, Konuma Mitsuharu, Alpha Science, Harrow, UK, c2005.
8. Introduction to surface and thin film processes /John A. Venables, Cambridge : Cambridge University Press, c2000.

Practical L4
PART- A
8051 PROGRAMMING (Any 10 Programs)

1. Program to add and subtract two 8-bit numbers.
2. Program to find 2's complements of a 16-bit number.
3. Program to find the sum of N 8-bit numbers.
4. Program to multiply two 8-bit numbers.
5. Program to multiply two 16-bit numbers.
6. Program to solve the linear equation y = mx + c.
7. Program to find the square of a number from look-up table.
8. Program to find largest of N numbers.
9. Program to find smallest of N numbers
10. Program to verify the truth tables of logic gates.
11. Program to find whether the given data is palindrome.
12. Program to arrange the numbers in ascending order.

PART- B (Any 08 Programs)

1. Toggling of ports.
2. Experiments related with timer in mode1.
3. Experiments related with timer in mode2.
4. Experiments related with serial data transfer with baud rate 4800.
5. Experiments related with serial data transfer wit baud rate 9600.
6. Experiments related with interrupts.
7. DAC interfacing.
8. Stepper motor interfacing.
9. Keyboard interfacing.
10. Traffic control interfacing.

Interdisciplinary Course
Electronics for All

Total Hours: 28 hrs

Module 1: - Introduction to Electronic Components   **07hrs**
Module 2: - Basic Electronic Circuits   **07hrs**.
Module 3: - Electronic Devices in Day today Gadgets   **07hrs**
Module 4: - Communication Systems   **07hrs**

Teaching hours: 2hrs per week (Total hours of the paper: 28hrs)
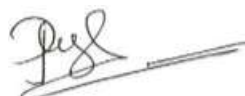**Self-study: 2 hrs per week**

Approved List of External examiner

Panel of External Examiners:

Sl. No	MEMBER NAME	COLLEGE
1	Prof. Sudha	BMS College for women, Bangalore.
2	Prof. Vanishree	NMKRV College for women, Bangalore.
3	Sri Cheluvappa	The National Degree College, Jayanagar.
4	Sri Mahadev	The National Degree College, Jayanagar, Bangalore.
5	Dr. Uma Ullas	Mount Carmel College, Bangalore.
6	Prof. Ranjanidevi	Jyothi Nivas College, Bangalore.
7	Sri. P. S. Manjunath	Jain University, Bangalore.
8	Sri. Malatesh Akkur	Jain University, Bangalore.
9	Prof. Mrutyunjaya Swamy	Vijaya College, Bangalore.
10	Prof. Lakshminarayana,	Vijaya College, 4th Block, Jayanagar, Bangalore.
11	Prof. Sanjeev,	Vijaya College, 4th Block, Jayanagar, Bangalore.
12	Prof. Thontadarya,	Vijaya College, Bangalore.
13	Prof. Vijayakumar Patil,	Basaveshwara College, Bangalore.
14	Smt. Rashmi B,	Sindhi College, Bangalore.
15	Smt. Mary,	Jyothi Nivas College, Bangalore.
16	Smt. Pratima Bhat,	Jyothi Nivas College, Bangalore.

List of BOE Members:

Sl. No	MEMBER NAME	COLLEGE
1	Smt. Poornima Hegde	The National Degree College, Basavangudi.
2	Sri Cheluvappa	The National Degree College, Jayanagar.
3	Sri. Malatesh Akkur	Jain University, Bangalore.
4	Smt. Bharathi Rao	The National Degree College, Jayanagar, Bangalore.
5	Prof. Vanishree	NMKRV College for women, Bangalore.
6	Prof. Ranjanidevi	Jyothi Nivas College, Bangalore.
7	Prof. Mallikarjuna Shetty	Vijaya College, Bangalore.
8	Smt. Mary	Jyothi Nivas College, Bangalore.

Smt. Poornima Hegde
CHAIRPERSON, BOARD OF STUDIESIN ELECTRONICS
THE NATIONLA COLLAGE,AUTONOMOUS,
BASAVANAGUDI,BANGALORE-04

Meeting Notice

THE NATIONAL DEGREE COLLEGE BASAVANAGUDI, BANGALORE-560 004

[AUTONOMOUS]

DEPARTMENT OF ELECTRONICS

Date: 28-05-2018

To,

Dear Sir/Madam,

Sub: Meeting of the Board of Studies in Electronics

I thank you sincerely for having been kind enough to accept our invitation to be a member of Board of Studies in Electronics. With your guidance, we would achieve most of our academic goals. Keeping this in view, I reiterate my request to you to be a member of the BOS and be the guiding spirit in our academic activities during the academic year 2018-19.

I take pleasure informing you that the Board of Studies Meeting in Electronics is scheduled to be held **2nd June 2018(Saturday) at 10-30 A.M.** in the Department of Electronics, The National Degree College [Autonomous], Basavanagudi, Bangalore-04 to discuss I and II Semester Syllabi.

I request you to make it convenient to attend the meeting.

We look forward to your august presence in the meeting.
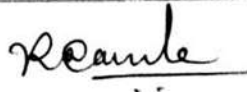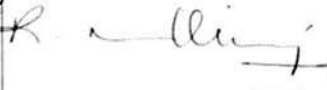
Thanking you,

Yours sincerely,

Smt. Poornima Hegde
Head of the Department

Member Present signature list

MEETING of the Board of Studies in Electronics held on Saturday 02-06-2018 at 10.30 am

Approval of 1st and 2nd Semester B.Sc. Electronics syllabus for CBCS pattern:

SL.No.	Name and designation of the Member	Signature
1.	Prof. Ramakrishna Damle Professor, Department of Physics J.B.Campus, Bangalore University, Bangaore-560 056.	*Rdamle*
2.	Dr. Manjesh, Professor, Department of electronic Science, J.B.Campus, Bangalore University, Bangaore-560 056.	*Manjesh*
3.	Prof.B.G.Shivaleelavathi, Professor, Dept of Electronics and Communications JSS Academy of Technical Education, JSS campus, Uttarahalli –Kengeri road, Bangalore-560 060.	
4.	Mr. Lohit. B.N (AST) TCS, Bangalore	*LohitBN*
5.	Prof. R. Mallikarjuna Setty, Associate professor H.O.D. of Electronics, Vijaya College, Baavanagudi, Bangalore- 560 004.	*R. Mallik*
6.	Prof. Malatesh S Akkur. ss Jain University Department of Electronics, ~~SBMJC~~ Bangalore-560 027.	*signature*
7.	Mrs. Ramya.M Department of Electronics, The National College, Basavanagudi, Bangalore- 560 004.	*Ramya*
8.	Prof. Poornima Hegde, H.O.D of Electronics, The National College, Basavanagudi, Bangalore- 560 004.	*Pugh*

Proceedings

DEPARTMENT OF ELECTRONICS

Board of Studies Meeting (UG Electronics) held on 02-06-2018
Report:

Members Present:

1. Dr. Ramakrishna Damle, Professor, Dept of Physics, Jnana Bharathi Campus, Bangalore University, Bangalore- 560 056.
2. Dr. Manjesh, Dept. Of Electronics Science, Jnana Bharathi Campus, Bangalore University, Bangalore- 560 056.
3. Prof. R. Mallikarjuna Shetty H.O.D. of Electronics Vijaya Degree College. Basavanagudi, Bangalore-560 004.
4. Prof. Malatesh S. Akkur, Jain University, Bangalore.
5. Mr. Lohit, Engineer, TCS, Bangalore.
6. Poornima Hegde, H.O.D of Electronics National Degree College (Autonomous) Basavanagudi, Bangalore-560 004.
7. Ramya M, Lecturer, National Degree College (Autonomous) Basavanagudi, Bangalore- 560 004.

Agenda:

1. Proceeding of previous BOS meeting.
2. Performance of the students in Previous semesters in Autonomous syllabi.
3. The syllabus for I and II semester courses in Electronics.
4. Approval of Panel of External Examiners and Board of Examiners.
5. Any other subject (related to Electronics syllabus).

Proceedings:

1. The Committee first discussed about the performance of the students in the previous semesters of the course and the difficulties in teaching the same. The members were satisfied with the performance of the students and appreciated the performance of the teachers in teaching the subjects.
2. The committee next discussed the syllabi of I and II semester of the course in Electronics.
3. Dr. Manjesh, Professor of Bangalore University suggested the following changes.
   i. Suggested swap module 4 of I Semester with the II semester.

    ii.   Allot few more hours to sensors and transducers.

    iii. Include experiment from optical sensors.

    iv. Include digital with Verilog.

4. Dr. Ramakrishna Damle, Professor, Dept of Physics, BU, also suggested the above changes and he also suggested

    i.   to keep the experiments only after completion of the related theory part.

    ii. To try Colpitts's and Heartly oscillators with op-amp.

    iii. To include "Digital Principle- Molvino and Leech".

5. Prof Maliikarjun Shetty HOD of Electronics in Vijaya College suggested the following changes.

    i.   Was happy with the BJT portions in I semester and advised not to change it at any cost.

    ii. Include digital experiments.

6. Prof. Malatesh Akkur, Jain University suggested few more things along with the above suggestions:

    i.   Suggested to remove BJT portion as it was already taught in PU level. But other members suggested to continue BJT portion as it is a basics for all other fields in Electronics.

7. The discussion was very fruitful and helpful for us to make teaching of electronics more effective.

8. All the suggestions were considered, and respective changes have been made.

With above suggestions the syllabi for B.Sc. I and II semester courses in Electronics was accepted by the Board of Studies.

HOD of Electronics

Approved Syllabus Abstract

Semester I (June 2018-19 onwards)
ELE T1: BASIC ELECTRONICS-I

Total Hrs: 54 hrs

Objective: To strengthen the basics of Electronics
Outcome: After studying this paper the students will be able to analyse the circuits using Network theorems, analyse the Series and parallel resonant circuits, analyse the BJT and FET circuits, analyse the BJT and FET Amplifier circuits, importance of digital electronics.

Module 1: Analysis of DC and AC circuits   **15 hrs**

- **Network Analysis:**
    - Convention for describing a network
    - Network equations: mesh analysis, nodal analysis, Problems.
    - Network Theorems
    - Transient phenomenon
- **AC Circuits:**
    - RL series and RC series circuits: problems.
    - Series and parallel Resonance circuits:

Module 2:   **15 hrs**

- Transistor and Biasing
- Field Effect Transistor (FET)
- Small Signal Amplifiers

Module 3:   **12 hrs**

- Multistage Amplifiers:
- Large Signal amplifiers:

Module 4:   **12 hrs**

- Digital Electronics: [Decimal, Binary, Octal and Hexadecimal – their inter conversion. BCD numbers (8421), Gray, Excess 3, ASCII and EBCDIC codes. Error detecting and correcting codes.
- Arithmetic operations in Binary, Hexadecimal.
- BCD addition and Excess 3 addition.
- Sign magnitude convention, 1's and 2's Complements-2's Complement Subtraction, signed number arithmetic-addition.] bridge course
- Positive and Negative Logic, Basic Logic gates
- Boolean algebra
- Simplification of Logic Expressions
- Combinational Logic Circuits

TEXTBOOKS:

1. Fundamentals of Electronics, B. Basavaraj-revised, Onkar Publications.
2. Electronic Devices and circuit theory, Robert Boylstead and Louis Nashelsky-PHI
3. Digital Fundamentals: Floyd-UBS publishers
4. Digital Principle- Molvino and Leech.

REFERENCE BOOKS:

1. Basic Electronics and Linear circuits, N.N. Bhargava, D.C Kulshresta and D.C. Gupta-   TMH.
2. Network Analysis by Hayte and Kimmerly.
3. Applied electronics, R.S.Sedha S. Chand & Company limited.
4. Network Analysis by Godse

Practical-L1
Lab in Basic Electronics -I
(Any eight)

1. Verification of KCL and KVL for D.C network.
2. Verification of Thevenin's theorem.
3. Verification of Maximum power transfer theorem.
4. Series and Parallel resonance circuit- determination of resonant frequency, Bandwidth and Q-factor.
5. CE Characteristics.
6. CE amplifier.
7. CC amplifier.
8. CS amplifier.
9. Tuned Amplifier.
10. Multistage RC coupled Amplifier (Demo experiment)
11. IC 7400-Realization of AND, OR, NOT, NOR AND X-OR gates and IC 7402Realization of AND, OR, NOT, NAND and X-NOR gates.
12. Construction of Half Adder and Half subtractor and Construction of Full Adder using IC 7486, 7402 and IC 7432.
13. Binary to Gray code and vice versa using IC 7486.
14. Decimal to BCD Priority encoder and BCD to Decimal Decoder.

ELE T2: BASIC ELECTRONICS-II

Total Hrs: 54 hrs

Objective: To strengthen the basics of Electronics
Outcome: After studying this paper the students will be able to analyse the feedback amplifier circuits, to analyse the oscillator circuits, to analyse the Power amplifier circuits, to analyse the UJT and SCR circuits, to recognize the different types of sensors and transducers and able to find their application in different areas.

Module 1:   **14 hrs**
- Differential amplifier
- Feedback in amplifiers

Module 2:   **12 hrs**
- Applications of Operational amplifier
- Adder, Integrator, Differentiator. Problems.
- Comparators: Schmitt trigger. Problems.
- Active filters
- Oscillators
- Multivibrators

Module 3:   **12hrs**

- Introduction to Power Electronics:
- Power Semiconductor Diodes and Transistors:
- Thyristors:
- UJT: Construction, working and Characteristics of UJT.

Module 4:   **16hrs**
- **Transducers and Sensors:**
- Transducers: Definition, Classification of transducers, Selecting a transducer
- Construction, Principle of working and application of: Strain Gages (uniaxial strain gage), Displacement transducer (capacitive, inductive, piezoelectric), Temperature transducer (thermocouple, thermistor) and photosensitive devices (Photovoltaic cells).
- Sensors: Definition, Classification of sensor, characteristics: Electrical, chemical, mechanical and optical characteristics. Construction, Principle of working of: Radiation sensors (Photo transistors, photovoltaic, fibre optic sensors), smart sensors Application of sensors in: Home appliance, automotive, aerospace, medical diagnostics, environmental monitoring.

TEXT BOOKS:
1. Operational amplifiers and Linear Integrated circuits, Ramakanth Gayakwad-PHI 5th edition.
2. Power Electronics by Bhimra
3. Sensors and transducers by D.Patranabis

REFERENCE BOOKS:
1. A Simplified approach by Anand Murthy and Nattarasu.
2. Basic Electronics and Linear circuits, N.N. Bhargava, D.C Kulshresta and D.C. Gupta-   TMH.
3. Modern electronic Instrumentation and measurement technique by Helfrick and Cooper.

Practical-L2
Lab in Basic Electronics -II
(Any eight experiments)

1. Non-inverting and inverting operational amplifier-ac response.
2. Inverting summer, Non-inverting summer and subtractor.
3. First order Active Low-Pass and High Pass filters using OP-AMP-Frequency response.
4. First order Active Band-Pass (narrow band) and Band Elimination (notch) filters using OP-AMP-Frequency response.
5. Phase shift oscillator/Wein bridge oscillator.
6. Colpitts's /Hartley oscillator. (Op- amp based)
7. SCR characteristics.
8. TRIAC Characteristics.
9. MOSFET Characteristics.
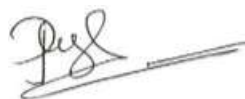10. IGBT Characteristics.

Approved List of External examiner

Panel of External Examiners:

Sl. No	MEMBER NAME	COLLEGE
1	Prof. Sudha	BMS College for women, Bangalore.
2	Prof. Vanishree	NMKRV College for women, Bangalore.
3	Sri Cheluvappa	The National Degree College, Jayanagar.
4	Sri Mahadev	The National Degree College, Jayanagar, Bangalore.
5	Dr. Uma Ullas	Mount Carmel College, Bangalore.
6	Prof. Ranjanidevi	Jyothi Nivas College, Bangalore.
7	Sri. P. S. Manjunath	Jain University, Bangalore.
8	Sri. Malatesh Akkur	Jain University, Bangalore.
9	Prof. Mrutyunjaya Swamy	Vijaya College, Bangalore.
10	Prof. Lakshminarayana,	Vijaya College, 4th Block, Jayanagar, Bangalore.
11	Prof. Sanjeev,	Vijaya College, 4th Block, Jayanagar, Bangalore.
12	Prof. Thontadarya,	Vijaya College, Bangalore.
13	Prof. Vijayakumar Patil,	Basaveshwara College, Bangalore.
14	Smt. Rashmi B,	Sindhi College, Bangalore.
15	Smt. Mary,	Jyothi Nivas College, Bangalore.
16	Smt. Pratima Bhat,	Jyothi Nivas College, Bangalore.

List of BOE Members:

Sl. No	MEMBER NAME	COLLEGE
1	Smt. Poornima Hegde	The National Degree College, Basavangudi.
2	Sri Cheluvappa	The National Degree College, Jayanagar.
3	Sri. Malatesh Akkur	Jain University, Bangalore.
4	Smt. Bharathi Rao	The National Degree College, Jayanagar, Bangalore.
5	Prof. Vanishree	NMKRV College for women, Bangalore.
6	Prof. Ranjanidevi	Jyothi Nivas College, Bangalore.
7	Prof. Mallikarjuna Shetty	Vijaya College, Bangalore.
8	Smt. Mary	Jyothi Nivas College, Bangalore.

Smt. Poornima Hegde
CHAIRPERSON, BOARD OF STUDIESIN ELECTRONICS
THE NATIONLA COLLAGE,AUTONOMOUS,
BASAVANAGUDI,BANGALORE-04

Year 17-18

Meeting Notice

THE NATIONAL DEGREE COLLEGE BASAVANAGUDI, BANGALORE-560 004

[AUTONOMOUS]

DEPARTMENT OF ELECTRONICS

Date: 05-06-2017

To

Dear Sir/Madam,

Sub: Meeting of the Board of Studies in Electronics

I thank you sincerely for having been kind enough to accept our invitation to be a member of Board of Studies in Electronics. With your guidance, we would achieve most of our academic goals. Keeping this in view, I reiterate my request to you to be a member of the BOS and be the guiding spirit in our academic activities during the academic year 2017-18.

I take pleasure informing you that the Board of Studies Meeting in Electronics is scheduled to be held **on 10th June 2017(Saturday) at 10-30 A.M.** in the Department of Electronics, The National Degree College [Autonomous], Basavanagudi, Bangalore-04 to discuss V and VI Semester Syllabi.

I request you to make it convenient to attend the meeting.

We look forward to your august presence in the meeting.
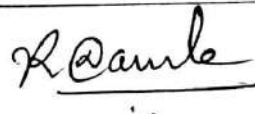
Thanking you,

Yours sincerely,

Smt. Poornima Hegde
Head of the Department

Member Present signature list

THE NATIONAL COLLEGE BASAVANAGUDI, BANGALORE-560 004
[AUTONOMOUS]
DEPARTMENT OF ELECTRONICS

MEETING of the Board of Studies in Electronics held on Saturday 10-06-2017 at 10.30 a.m

Approval of 5th and 6th Semester B.Sc. Electronics syllabus for CBCS pattern:

Sl.No.	Name and designation of the Member	Signature
1.	Prof. Ramakrishna Damle Professor, Department of Physics J.B.Campus, Bangalore University, Bangaore-560 056.	*R Damle*
2.	Dr. Manjesh, Professor, Department of electronic Science, J.B.Campus, Bangalore University, Bangaore-560 056.	*Manjesh*
3.	Prof.B.G.Shivaleelavathi, Professor, Dept of Electronics and Communications JSS Academy of Technical Education, JSS campus, Uttarahalli –Kengeri road, Bangalore-560 060.	
4.	Mr. Shivakumarayya, EI Labs India Pvt.Ltd. Embedded software design engineer.	
5.	Prof. R. Mallikarjuna Setty, H.O.D. of Electronics, Vijaya College, Baavanagudi, Bangalore- 560 004.	*R. ....*
6.	Prof. Malatesh S Akkur, Department of Electronics, Jain University, Bangalore-560 027.	
7.	Prof. Poornima Hegde, H.O.D of Electronics, National Degree College, Basavanagudi, Bangalore- 560 004.	
8.	Prof. Ramya M Lecturer, National College Basavanagudi Bangalore -04	*Ramya M*

Proceedings

THE NATIONAL DEGREE COLLEGE, BASAVANAGUDI, BANGALORE - 04 AUTONOMOUS

DEPARTMENT OF ELECTRONICS

Board of Studies Meeting (UG Electronics) held on 10-06-2017 ....Report

Members Present:

1. Dr. Ramakrishna Damle, Professor, Dept of Physics, Jnana Bharathi Campus, Bangalore University, Bangalore- 560 056.
2. Dr. Manjesh, Dept. Of Electronics Science, Jnana Bharathi Campus, Bangalore University, Bangalore- 560 056.
3. Prof. R. Mallikarjuna Shetty H.O.D. of Electronics Vijaya Degree College. Basavanagudi, Bangalore-560 004.
4. Prof. Malatesh S. Akkur, Jain University, Bangalore.
5. Prof. Ramya M. National Degree College (Autonomous) Basavanagudi, Bangalore-560 004.
6. Prof. Poornima Hegde, H.O.D of Electronics National Degree College (Autonomous) Basavanagudi, Bangalore-560 004.

Agenda:

1. Proceeding of previous BOS meeting.
2. Performance of the students in previous semesters in Autonomous syllabi.
3. The syllabus for V and VI semester courses in Electronics.
4. Any other subject (related to Electronics syllabus).

Proceedings:

1. The Committee first discussed about the performance of the students in the previous semesters of the course and the difficulties in teaching the same. The members were satisfied with the performance of the students and appreciated the performance of the teachers in teaching the subjects.
2. The committee next discussed the syllabi of V and VI semester of the course in Electronics.

3. Dr. Manjesh, Professor of Bangalore University suggested the following changes.
   i. Make the syllabus as easy as possible so that it develops the confidence in the students.
   ii. Suggested to frame a single paper which includes both digital electronics and verilog.
   iii. Suggested to give hands on experience with the FPGA kits.

4. Dr. Ramakrishna Damle, Professor, Dept of Physics, BU, was happy with the syllabus and he suggested the following
   i. Was concerned about the time frame of 45 hours for completing the proposed syllabus.
   ii. Suggested to cut down those basic concepts that have been covered in lower class or in physics.
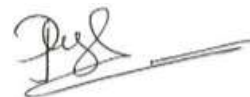
5. Prof Maliikarjun Shetty HOD of Electronics in Vijaya College suggested the following changes.
   i. To keep a maximum of 2 texts books and move the rest to the reference.
   ii. To continue with verilog and instrumentation paper as proposed and to include it with digital electronics in the coming years.

6. Prof. Malatesh Akkur, Jain University agreed with above members and suggested to do the required changes in the syllabus also suggested to remove verilog from the theory and do only the experiments on it.

7. The discussion was very fruitful and helpful for us to make teaching of electronics more effective.
8. All the suggestions were considered and respective changes have been made.

With above suggestions the syllabi for B.Sc. V and VI semester courses in Electronics was accepted by the Board of Studies.

HOD of Electronics

Approved Syllabus Abstract

V Semester (June 2017-18 onwards)

ELT5: Communication   **Total Hours: 44hrs**

Objectives: After studying this paper the students will be able to explain the basics of Communications Techniques and Devices. The students will also be able to explain about the various types of Communications Techniques.

Module 1:   **15 hrs**
- Electromagnetic spectrum, propagation of EM waves, Introduction to communication system and Noise:
- Block diagram of AM and FM Transmitter.
- Transmission lines and Antennas

Module 2:   **05 hrs**
- Pulse and Digital modulation techniques

Module 3:   **15hrs**
- Introduction to different types of Communication system
- Cellular Communication System
- Data communications and networking
- Satellite Communications
- Optical Fiber Communication System:

Module 4:   **10hrs**
- **Microwave Radio Communications:**
- Microwave Tubes,
- Semiconductor microwave devices and
- RADAR

TEXTBOOK:
1. Electronic Communication system, Kennedy &Davis, IV edition-TATA Mc-GRAW hill.
2. Electronic Communication systems, Fundamentals through Advanced Wayne Tomasi-Vth edition-Pearson Education

REFERENCE BOOKS:
1. LAB experiments- Quarterly Journals, Kamaljeeth Instruments.
2. Principles of Communication Engineering-Umesh Sinha-satya prakashan, New Delhi
3. Advanced Communication System (communication system-II)-

SEMESTER V
ELT6: VERILOG AND INSTRUMENTATION

Total number of Hours: 44

Objectives: After studying this paper the students will be able to understand the programming of a hardware and the application of instruments in the medical field.

MODULE 1:   **13 Hours**
- Basics of Verilog:
- Types of descriptions: Data flow descriptions, Behavioural Descriptions, Structural Descriptions, Switch – level descriptions, mixed type descriptions

MODULE 2:   **9 Hours**
- Modularity in Verilog
- Synthesis Basics: Highlights of synthesis, Synthesis information from module, mapping process and always in hardware domain.

MODULE 3:   **11 Hours**
- Measurement Errors: Gross errors and systematic errors, Absolute and relative errors, Accuracy, Precision, Resolution and Significant figures.
- Measurement of resistance, inductance and capacitance:
- Fundamentals of biomedical instruments:

MODULE 4:   **12 Hours**
- Electrocardiograph:
- Genesis of Electroencephalogram (EEG),
- Block diagram description of an Electroencephalograph.
- Blood pressure measurement: Direct & Indirect method,
- Measurement of Respiration rate
- Blood Flow Meters
- Cardiac Pacemakers and Defibrillators:

TEXTBOOK:

1. Guide to Verilog HDL - A practical primer by J. Bhasker; Addison Wesley Longman
2. Pub. HDL programming Fundamental: VHDL and Verilog – Botros
3. "Modern Electronic Instrumentation and Measurement Techniques", A.D. Helfric and W.D. Cooper, PHI of India ltd.,
4. Biomedical Instrumentation – Khandpur

REFERENCE BOOKS:
1. Bio-Medical instrumentation- Rangan ManiSharma
2. Bio-Medical Instrumentation- Dr. M Arumugam.

Practical- L5
Lab in Communication
(Any Eight Experiments)

1. Amplitude Modulator
2. Amplitude demodulator.
3. 555 as astable and monostable multivibrators.
4. Pre-Emphasis and De-Emphasis.
5. Automatic Gain Control.
6. Saw-tooth wave generator using IC 555.
7. Voltage controlled oscillator using IC 555.
8. Frequency multiplier using transistor.
9. Frequency Mixer.
10. PAM using transistor.
11. PWM and PPM using IC-555.
12. ASK modulation and demodulation using OP-AMP or transistor
13. FSK modulation using IC-555 or 565.

Practical – L6
Lab in Verilog Programming
(Any EIGHT experiments)

1. Introduction to HDL (Verilog) and software tool
2. Realization of all the Logic gates
3. Realization of Adder and subtractor (Both Half and Full) 4. Design of Decoders, encoders and comparators
5. Design of Multiplexer, demultiplexer.
6. Implementation of full adder using three modelling styles
7. Design of 32-bit ALU
8. Realization of Flip flops (SR, D, JK and T)
9. Binary and BCD counters (synchronous and asynchronous)
10. Shift register counters – ring counter and Johnson counter

VI Semester (June 2017-18 onwards)
ELT7 – Semiconductor Devices and Nano Technology

Total number of Hours: 44

Objectives: After studying this paper the students will be able to analyse the field of research in the advanced electronics and will be motivated towards the research in   Nano electronics.

Module 1:   **10 hrs**
- Introduction to semiconductor
- p-n junctions:
- FET

Module 2:   **10 hrs**
- Introduction to nanomaterials: 3D, 2D, 1D, 0D
- Nanostructures,
- Nanostructure assembly
- Preparation methods:
- Bottom -up synthesis
- Top-down synthesis
- Synthesis of Nanomaterials

Module 3:   **10 hrs**
- Characterization techniques of nanomaterials

Module 4:   **15 hrs**
- Introduction to MEMS
- Introduction to Microfabrication Techniques
- Mechanical Sensors and actuators
- Thermal Sensors and Actuators: Thermistors,
- Micro-opto-electromechanical Systems
- Magnetic Sensors and actuators
- Radio Frequency (RF) MEMS

Textbooks:
1. Solid state electronic devices – Sixth edition by Ben G Streetman, Sanjay Kumar Banerjee.
2. Nanostructures and Nanomaterials: Synthesis, Properties and Applications by Guozhong Cao, Imperial College Press, London, 2004.
3. "MEMS" by Nitaigour Premachand Mahalik, Tata McGraw Hill Education Private Limites, New Delhi.

Reference Books:
1. Silicon VLSI Technology, Plummer, Deal , Griffin ,Pearson Education India.
2. Encyclopaedia of Materials Characterization, Edited by: Brundle, C.Richard; Evans, Charles A. Jr.;Wilson, Shaun ; Elsevier.
3. Introduction to nano electronics – Vladimir V. Mitin
4. "Introduction to Microelectromechanical Microwave Systems, Second Edition", Hector J. De Los Santos, Artech House, 2004.
5. "RF MEMS Circuit Design for Wireless Applications", Hector J. De Los Santos, Artech House, 2002.
6. Plasma techniques for film deposition, Konuma Mitsuharu, Alpha Science, Harrow, UK, c2005.
7. Introduction to surface and thin film processes /John A. Venables, Cambridge : Cambridge University Press, c2000.

ELT8: SIGNALS & SYSTEMS

Total number of Hours: 45

Objectives: After studying this paper the students will be able to analyse the functioning of a signal and the mechanism behind the processing of a digital signal.

MODULE 1:   **12 Hours**
- Introduction
- LTI systems

MODULE2:   **10 Hours**
- Time -domain representations for LTI systems:

MODULE 3:   **11 Hours**
- Fourier representation for signals:
- Discrete Fourier Transforms (DFT):

MODULE 4:   **12 Hours**
- Z-Transforms:

-

TEXT BOOK
1. Simon Haykin, "Signals and Systems", John Wiley India Pvt. Ltd., 2ndEdn, 2008.
2. Michael Roberts, "Fundamentals of Signals & Systems", 2nded, Tata McGraw-Hill, 2010.

REFERENCE BOOKS:
1. Alan V Oppenheim, Alan S, Willsky and A Hamid Nawab, "Signals and Systems"   Pearson   Education Asia / PHI, 2nd edition, 1997. Indian Reprint 2002.
2. H. P Hsu, R. Ranjan , "Signals and Systems", Scham's outlines, TMH, 2006.
3. B. P. Lathi , "Linear Systems and Signals", Oxford University Press, 2005.
4. Ganesh Rao and SatishTunga , "Signals and Systems", Pearson/Sanguine Technical Publishers, 2004.

Practical L7
Lab in microwave and optical fibre
(Any EIGHT experiments)

1. Characteristics of Optical fibre
2. Transmission and reception through optical fibre.
3. To setting up fibre optic analog link.
4. Study of losses in optical fibre.
5. Study of numerical aperture of optical fibre.
6. Study of characteristics of fibre optic LED's and photo detector. 7. Sampling theorem
8. QPSK.
9. Microwave Experiments (any four).

PracticalL8
MATLAB Programming
(Any EIGHT experiments)

1. Generation of Unit Impulse and unit step signal.
2. Shifting and folding a sequence.
3. Adding and multiplying two sequences of different ranges.
4. Odd and even part of a signal.
5. Verification of sampling theorem.
6. Impulse response of a given system
7. Linear convolution of two given sequences.
8. Autocorrelation and Cross correlation of a given sequence.
9. Solving a given difference equation.
10. Computation of N point DFT of a given sequence and to plot magnitude and phase spectrum.
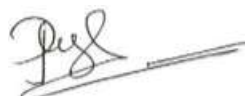11. Linear convolution of two sequences using DFT and IDFT.

Approved List of External examiner

Panel of External Examiners:

Sl. No	MEMBER NAME	COLLEGE
1	Prof. Sudha	BMS College for women, Bangalore.
2	Prof. Vanishree	NMKRV College for women, Bangalore.
3	Sri Cheluvappa	The National Degree College, Jayanagar.
4	Sri Mahadev	The National Degree College, Jayanagar, Bangalore.
5	Dr. Uma Ullas	Mount Carmel College, Bangalore.
6	Prof. Ranjanidevi	Jyothi Nivas College, Bangalore.
7	Sri. P. S. Manjunath	Jain University, Bangalore.
8	Sri. Malatesh Akkur	Jain University, Bangalore.
9	Prof. Mrutyunjaya Swamy	Vijaya College, Bangalore.
10	Prof. Lakshminarayana,	Vijaya College, 4th Block, Jayanagar, Bangalore.
11	Prof. Sanjeev,	Vijaya College, 4th Block, Jayanagar, Bangalore.
12	Prof. Thontadarya,	Vijaya College, Bangalore.
13	Prof. Vijayakumar Patil,	Basaveshwara College, Bangalore.
14	Smt. Rashmi B,	Sindhi College, Bangalore.
15	Smt. Mary,	Jyothi Nivas College, Bangalore.
16	Smt. Pratima Bhat,	Jyothi Nivas College, Bangalore.

List of BOE Members:

Sl. No	MEMBER NAME	COLLEGE
1	Smt. Poornima Hegde	The National Degree College, Basavangudi.
2	Sri Cheluvappa	The National Degree College, Jayanagar.
3	Sri. Malatesh Akkur	Jain University, Bangalore.
4	Smt. Bharathi Rao	The National Degree College, Jayanagar, Bangalore.
5	Prof. Vanishree	NMKRV College for women, Bangalore.
6	Prof. Ranjanidevi	Jyothi Nivas College, Bangalore.
7	Prof. Mallikarjuna Shetty	Vijaya College, Bangalore.
8	Smt. Mary	Jyothi Nivas College, Bangalore.

Smt. Poornima Hegde
CHAIRPERSON, BOARD OF STUDIESIN ELECTRONICS
THE NATIONLA COLLAGE,AUTONOMOUS,
BASAVANAGUDI,BANGALORE-04

Year 16-17

Meeting Notice

THE NATIONAL DEGREE COLLEGE BASAVANAGUDI, BANGALORE-560 004

[AUTONOMOUS]

DEPARTMENT OF ELECTRONICS

Date: 14-06-2016

To

Dear Sir/Madam,

Sub: Meeting of the Board of Studies in Electronics

I thank you sincerely for having been kind enough to accept our invitation to be a member of Board of Studies in Electronics. With your guidance, we would achieve most of our academic goals. Keeping this in view, I reiterate my request to you to be a member of the BOS and be the guiding spirit in our academic activities during the academic year 2016-17.

I take pleasure informing you that the Board of Studies Meeting in Electronics is scheduled to be held **on 20th June 2016 at 11-00 A.M.** in the Department of Electronics, The National Degree College [Autonomous], Basavangudi, Bangalore-04 to discuss III and IV Semester Syllabi.

I request you to make it convenient to attend the meeting.

We look forward to your august presence in the meeting.

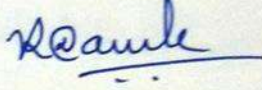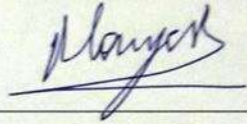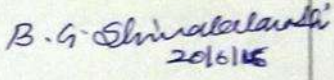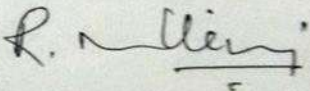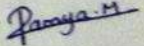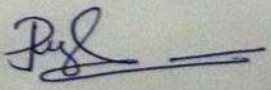Thanking you,

Yours sincerely,

Smt. Poornima Hegde
Head of the Department

Member Present signature list

THE NATIONAL DEGREE COLLEGE BASAVANAGUDI, BANGALORE-560 004
[AUTONOMOUS]
DEPARTMENT OF ELECTRONICS

MEETING of the Board of Studies in Electronics held on Monday 20-06-2016 at 11:00a.m

Approval of 3rd and 4th Semester B.Sc. Electronics syllabus for CBCS pattern:

Sl.No.	Name and designation of the Member	Signature
1.	Prof. Ramakrishna Damle Professor, Department of Physics J.B.Campus, Bangalore University, Bangaore-560 056.	R@amle
2.	Dr. Manjesh, Professor, Department of electronic Science, J.B.Campus, Bangalore University, Bangaore-560 056.	Manjesh
3.	Prof.B.G.Shivaleelavathi, Professor, Dept of Electronics and Communications JSS Academy of Technical Education, JSS campus, Uttarahalli –Kengeri road, Bangalore-560 060.	B.G.Shivaleelavathi 20/6/16
4.	Mr. Shivakumarayya, EI Labs India Pvt.Ltd. Embedded software design engineer.	
5.	Prof. R. Mallikarjuna Setty, H.O.D. of Electronics, Vijaya College, Baavanagudi, Bangalore- 560 004.	R. Malli
6.	Prof. Malatesh S Akkur, Department of Electronics, Jain University, Bangalore-560 027.	
7.	Prof. Ramya.M Department of Electronics, The National College, Basavangudi, Bengaluru-560004.	Ramya.M
8.	Prof. Poornima Hegde, H.O.D of Electronics, National Degree College, Basavanagudi, Bangalore- 560 004.	PyL

Proceedings

THE NATIONAL DEGREE COLLEGE, BASAVANAGUDI, BANGALORE - 04 AUTONOMOUS

DEPARTMENT OF ELECTRONICS

Board of Studies Meeting (UG Electronics) held on 20-06-2016 ....Report

Members Present:

1. Dr. Ramakrishna Damle, Professor, Dept of Physics, Jnana Bharathi Campus, Bangalore University, Bangalore- 560 056.
2. Dr. Manjesh, Dept. Of Electronics Science, Jnana Bharathi Campus, Bangalore University, Bangalore- 560 056.
3. Prof.B.G.Shivaleelavathi, Professor, Dept of Electronics and Communications JSS Academy of Technical Education
4. Prof. R. Mallikarjuna Shetty H.O.D. of Electronics Vijaya Degree College. Basavanagudi, Bangalore-560 004.
5. Prof. Malatesh S. Akkur, Jain University, Bangalore.
6. Prof. Ramya M. National Degree College (Autonomous) Basavanagudi, Bangalore-560 004.
7. Poornima Hegde, H.O.D of Electronics National Degree College (Autonomous) Basavanagudi, Bangalore-560 004.

Agenda:

1. Proceeding of previous BOS meeting.
2. Performance of the students in Previous semesters in Autonomous syllabi.
3. The syllabus for III and IV semester courses in Electronics.
4. Any other subject (related to Electronics syllabus).

Proceedings:

1. The Committee first discussed about the performance of the students in the previous semesters of the course and the difficulties in teaching the same. The members were satisfied with the performance of the students and appreciated the performance of the teachers in teaching the subjects.

2. The committee next discussed the syllabi of III and IV semester of the course in Electronics.
3. Dr. Manjesh, Professor of Bangalore University suggested the following changes.
     i. Make the syllabus as easy as possible so that it develops the confidence in the students.
     ii. Maintain the uniformity in the experiments.
     iii. Suggested that experiments from both the parts must be given.
     iv. Interdisciplinary paper should be very easy.

4. Dr. Ramakrishna Damle, Professor, Dept of Physics, BU, also suggested the above changes and he appreciated the syllabus framed for the interdisciplinary paper.

5. Prof Maliikarjun Shetty HOD of Electronics in Vijaya College suggested the following changes.
     i. Introduce Modern Digital Electronics by R P Jain as a text book for 3rd semester,
     ii. Include latest ARM and PIC families and suggested to upgrade with the families every year.
     iii. He also agreed with Dr. Manjesh suggestions.

6. Prof.B.G.Shivaleelavathi, Professor, Dept of Electronics and Communications JSS Academy of Technical Education suggested the following changes.
     i. Suggested to elaborate PIC and ARM families.
     ii. Include a text book for PIC.
     iii. Include lower power devices along with embedded system.
     iv. Combine experiment no2 with 8 in practical L4.
     v. Introduce portions on renewable sources in interdisciplinary paper.

7. Prof. Malatesh Akkur, Jain University agreed with above members and suggested to do the required changes in the syllabus.

8. The discussion was very fruitful and helpful for us to make teaching of electronics more effective.
9. All the suggestions were considered and respective changes have been made.

With above suggestions the syllabi for B.Sc. III and IV semester courses in Electronics was accepted by the Board of Studies.

HOD of Electronics

Approved Syllabus Abstract

III Semester (June 2016 onwards)
ELT3: Digital Electronics and 8051 Microcontroller

Total Hrs: 54 hrs

Objectives: After studying this paper students will understand how to Design the Combinational and Sequential logic circuits and students will be able to write the Assembly Language program for 8051 Microcontroller

Module 1: Sequential Logic Circuits: **14 hrs**
- D to A conversion

Module 2: Integrated circuits technologies   **13 hrs**
- Programmable logic devices:
- Semiconductor memories:

Module 3: Introduction to Microcontrollers: **13 hrs**
- Introduction,
- The 8051 Architecture:
- Counters and Timers- Timer Counter Interrupts, Timing, Counting

Module 4: Addressing Modes and Instructions Sets: **14 hrs**

TEXTBOOKS:
1. Digital Fundamentals: Floyd-UBS publishers.
2. Kenneth J. Ayala ; "The 8051 Microcontroller Architecture, Programming & Applications" 2e, Penram International, 1996 / Thomson Learning 2005.
3. Modern Digital Electronics by R P Jain.

REFERENCE BOOKS:
1. Electronic Principles: A.P. MALVINO-TMH 5th edition. Muhammad Ali Mazidi and Janice Gillespie Mazidi and Rollin
2. D.McKinlay; "The 8051 Microcontroller and Embedded Systems – using assembly and C"- PHI, 2006 / Pearson, 2006
3. Ajay V.Deshmukh; "Microcontrollers- Theory and Applications",TMH,2005.

Practical-L3
Digital Electronics and microcontroller
PART-A
(Any 8 experiments)

1) IC 7400-Realization of AND, OR, NOT, NOR AND X-OR gates and IC 7402 Realization of AND, OR, NOT, NAND and X-NOR gates.
2) Construction of Half Adder and Half subtractor and Construction of Full Adder using IC 7486, 7402 and IC 7432.
3) Binary to Gary code and vice versa using IC 7486.
4) Decimal to BCD Priority encoder and BCD to Decimal Decoder.
5) BCD to seven segment conversion using IC 7447.
6) Study of Multiplexer using IC 74150 and De-Multiplexer using IC 74154.
7) D/A converter using weighted resister method.
8) Unlocked and Clocked SR Flip-Flop.
9) J-K Flip-flop and conversion to D and T flip flop using IC 7476.
10) Four-bit binary ripple counter using IC 7476.

PART-B
8051 PROGRAMMING (Any 10 Programs)

1) Program to add and subtract two 8-bit numbers.
2) Program to find 2's complements of a 16-bit number.
3) Program to find the sum of N 8-bit numbers.
4) Program to multiply two 8-bit numbers.
5) Program to multiply two 16-bit numbers.
6) Program to solve the linear equation y = mx + c.
7) Program to find the square of a number from look-up table.
8) Program to find largest of N numbers.
9) Program to find smallest of N numbers
10) Program to verify the truth tables of logic gates.
11) Program to find whether the given data is palindrome.
12) Program to arrange the numbers in ascending order.

IV Semester (December 2016 onwards)
ELT4: Programming in C and Embedded C

Total Hrs: 54 hrs

Objectives: After studying this paper the students will be able to explain the basics of C Programming and write the programs for 8051 microcontrollers in C the students will also be able to interface some modules to 8051 Microcontroller.
After studying this paper, the students will appreciate applications of Embedded systems.

Module 1: 14 hrs
- Basics of Programming: Algorithm, flowchart and pseudo code
- Introduction to C
- I/O statements
- Control Structures
- Arrays

Module 2: 12hrs
- Functions
- Pointers
- Structures, Unions and macros

Module 3: 14 hrs
- 8051 programming in C:
- Programming 8051 Timers,
- Counter Programming,
- Interrupts Programming:
- Programming serial data transfer, in C.
- Interfacing with 8051: Interfacing 8051 to LCD, Keyboard, ADC, DAC, Stepper motor.

Module 4: 14 hrs
- INTRODUCTION TO EMBEDDED SYSTEMS:

TEXTBOOKS:
1. Let us C by Yeshwant Kanetkar
2. The C Programming Language: Balagurusamy.
3. Muhammad Ali Mazidi and Janice Gillespie Mazidi and Rollin D.McKinlay; "The 8051 Microcontroller and Embedded Systems – using assembly and C "- PHI, 2006 / Pearson, 2006

REFERENCE BOOKS:
1. The C programming Language: B.W. kerningham and D. M. Ritchie, prentice Hall of India.
2. C Programming (Schaum series)
3. Predko ; "Programming and Customizing the 8051 Microcontroller" –, TMH

Practical L4
C and Embedded C PART- A
(Any 8 Programs)

1. Printing the reverse of an integer and a string.
2. Printing the odd and even series of N numbers.
3. Get a string and convert the lowercase to uppercase and vice--versa using *getchar ()* and *putchar()*.
4. Finding the occurrence of a particular character in a string.
5. Input a string and find the number of each of the vowels appear in the string.
6. Accept N words and make it as a sentence by inserting blank spaces and a full stop at the end.
7. Checking whether the given matrix is an identity matrix or not.
8. Finding the first N terms of Fibonacci series.
9. Declare 3 pointer variables to store a character, a character string and an integer respectively. Input values into these variables. Display the address and the contents of each variable.
10. Recursive program to find the factorial of an integer.
11. Finding the maximum of 4 numbers by defining a macro for the maximum of two numbers.
12. Define a structure with three members and display the same.
13. Declare a union with three members of type integer, char, string and illustrate the use of union.

PART- B (Any 08 Programs)

1. Toggling of ports.
2. Experiments related with timer in mode1.
3. Experiments related with timer in mode2.
4. Experiments related with serial data transfer with baud rate 4800.
5. Experiments related with serial data transfer wit baud rate 9600.
6. Experiments related with interrupts.
7. DAC interfacing.
8. Stepper motor interfacing.
9. Keyboard interfacing.
10. Traffic control interfacing.

Interdisciplinary Course
Electronics for All

		Total Hours: 54 hrs
Module 1: - Introduction to Electronic Components		**07hrs**
Module 2: - Basic Electronic Circuits		**07hrs**
Module 3: - Electronic Devices in Day today Gadgets		**07hrs**
Module 4: - Communication Systems		**07hrs**

Note:
Teaching hours: 2hrs per week (Total hours of the paper: 28hrs)
Self-study: 2 hrs per week
Self-study includes assignments, seminars, video sessions, mini projects and practical's.
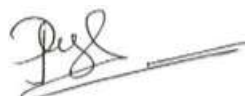
Approved List of External examiner

Panel of External Examiners:

Sl. No	MEMBER NAME	COLLEGE
1	Prof. Sudha	BMS College for women, Bangalore.
2	Prof. Vanishree	NMKRV College for women, Bangalore.
3	Sri Cheluvappa	The National Degree College, Jayanagar.
4	Sri Mahadev	The National Degree College, Jayanagar, Bangalore.
5	Dr. Uma Ullas	Mount Carmel College, Bangalore.
6	Prof. Ranjanidevi	Jyothi Nivas College, Bangalore.
7	Sri. P. S. Manjunath	Jain University, Bangalore.
8	Sri. Malatesh Akkur	Jain University, Bangalore.
9	Prof. Mrutyunjaya Swamy	Vijaya College, Bangalore.
10	Prof. Lakshminarayana,	Vijaya College, 4th Block, Jayanagar, Bangalore.
11	Prof. Sanjeev,	Vijaya College, 4th Block, Jayanagar, Bangalore.
12	Prof. Thontadarya,	Vijaya College, Bangalore.
13	Prof. Vijayakumar Patil,	Basaveshwara College, Bangalore.
14	Smt. Rashmi B,	Sindhi College, Bangalore.
15	Smt. Mary,	Jyothi Nivas College, Bangalore.
16	Smt. Pratima Bhat,	Jyothi Nivas College, Bangalore.

List of BOE Members:

Sl. No	MEMBER NAME	COLLEGE
1	Smt. Poornima Hegde	The National Degree College, Basavangudi.
2	Sri Cheluvappa	The National Degree College, Jayanagar.
3	Sri. Malatesh Akkur	Jain University, Bangalore.
4	Smt. Bharathi Rao	The National Degree College, Jayanagar, Bangalore.
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7	Prof. Mallikarjuna Shetty	Vijaya College, Bangalore.
8	Smt. Mary	Jyothi Nivas College, Bangalore.

Smt. Poornima Hegde
CHAIRPERSON, BOARD OF STUDIESIN ELECTRONICS
THE NATIONLA COLLAGE,AUTONOMOUS,
BASAVANAGUDI,BANGALORE-04

Year 15-16

Meeting Notice

THE NATIONAL DEGREE COLLEGE BASAVANAGUDI, BANGALORE-560 004

[AUTONOMOUS]

DEPARTMENT OF ELECTRONICS

Date: 19-06-2015

To

Dear Sir/Madam,
Sub: Meeting of the Board of Studies in Electronics

      I thank you sincerely for having been kind enough to accept our invitation to be a member of Board of Studies in Electronics. With your guidance, we would achieve most of our academic goals. Keeping this in view, I reiterate my request to you to be a member of the BOS and be the guiding spirit in our academic activities during the academic year 2015-16.

      I take pleasure informing you that the Board of Studies Meeting in Electronics is scheduled to be held **on 24th June 2015 at 1-30 P.M.** in the Department of Electronics, The National Degree College [Autonomous], Basavanagudi, Bangalore-04 to discuss I and II Semester Syllabi.

      I request you to make it convenient to attend the meeting.

      We look forward to your august presence in the meeting.
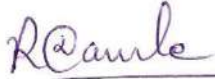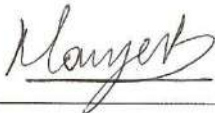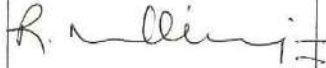
Thanking you,

Yours sincerely,

Smt. Poornima Hegde
Head of the Department

Member Present signature list

THE NATIONAL DEGREE COLLEGE BASAVANAGUDI, BANGALORE-560 004
[AUTONOMOUS]
DEPARTMENT OF ELECTRONICS

MEETING of the Board of Studies in Electronics held on Wednesday 24-06-2015 at 10.30 a.m

Approval of 1st and 2nd Semester B.Sc. Electronics syllabus for CBCS pattern:

Sl.No.	Name and designation of the Member	Signature
1.	Prof. Ramakrishna Damle Professor, Department of Physics J.B.Campus, Bangalore University, Bangaore-560 056.	
2.	Dr. Manjesh, Professor, Department of electronic Science, J.B.Campus, Bangalore University, Bangaore-560 056.	
3.	Prof.B.G.Shivaleelavathi, Professor, Dept of Electronics and Communications JSS Academy of Technical Education, JSS campus, Uttarahalli –Kengeri road, Bangalore-560 060.	
4.	Mr. Shivakumarayya, EI Labs India Pvt.Ltd. Embedded software design engineer.	
5.	Prof. R. Mallikarjuna Setty, H.O.D. of Electronics, Vijaya College, Baavanagudi, Bangalore- 560 004.	
6.	Prof. Malatesh S Akkur, Department of Electronics, SBMJC Bangalore-560 027.	
7.	Prof. Poornima Hegde, H.O.D of Electronics, National Degree College, Basavanagudi, Bangalore- 560 004.	

Proceedings

THE NATIONAL DEGREE COLLEGE, BASAVANAGUDI, BANGALORE - 04 AUTONOMOUS

DEPARTMENT OF ELECTRONICS

Board of Studies Meeting (UG Electronics) held on 24-06-2015…............................. Report

Members Present:

1. Dr. Ramakrishna Damle, Professor, Dept of Physics, Jnana Bharathi Campus, Bangalore University, Bangalore- 560 056.
2. Dr. Manjesh, Dept. Of Electronics Science, Jnana Bharathi Campus, Bangalore University, Bangalore- 560 056.
3. Prof.B.G.Shivaleelavathi, Professor, Dept of Electronics and Communications JSS Academy of Technical Education
4. Prof. R. Mallikarjuna Shetty H.O.D. of Electronics Vijaya Degree College. Basavanagudi, Bangalore-560 004.
5. Prof. Malatesh S. Akkur, Jain University, Bangalore.
6. Sri Shivkumarayya, EI Labs India Pvt.Ltd.Embedded software design engineer.
7. Poornima Hegde, H.O.D of Electronics National Degree College (Autonomous) Basavanagudi, Bangalore-560 004.
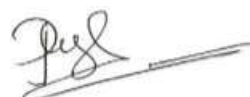
Agenda:

1. Proceeding of previous BOS meeting.
2. Performance of the students in Previous semesters in Autonomous syllabi.
3. The syllabus for I and II semester courses in Electronics.
4. Approval of Panel of External Examiners and Board of Examiners.
5. Any other subject (related to Electronics syllabus).

Proceedings:

1. The Committee first discussed about the performance of the students in the previous semesters of the course and the difficulties in teaching the same. The members were satisfied with the performance of the students and appreciated the performance of the teachers in teaching the subjects.
2. The committee next discussed the syllabi of I and II semester of the course in Electronics.
3. Dr. Manjesh, Professor of Bangalore University suggested the following changes.
   i. Better to include some portions of digital electronics in the syllabus in I semester itself.
   ii. Network Analysis book written by Roy Choudary as a reference book.
   iii. Fundamentals of Electronics by Basavaraj as Text book.

    iv.   In the second semester syllabus, include R, RC and also UJT triggering along with the characteristics of UJT.

    v.   To include MCT and introduction to smart power devices, an advanced power electronics technology.

4. Dr. Ramakrishna Damle, Professor, Dept of Physics, BU, also suggested the above changes and he also suggested to keep the experiments only after completion of the related theory part.

5. Prof Mallikarjun Shetty HOD of Electronics in Vijaya College suggested the following changes.

    i.   To include Darlington Pair in module 3 of I Sem.

    ii.   Before explaining FET CS amplifier, explain FET biasing of I Sem.

    iii.   Increase module 3 by 2 hrs so that total hrs will be 54 hrs.

    iv.   Mention the different types in large signal amplifiers.

    v.   Better to explain LC Oscillator using Op-amp.

6. Prof.B.G.Shivaleelavathi, Professor, Dept of Electronics and Communications JSS Academy of Technical Education suggested the following changes.

    i.   Transient phenomenon should be solved with the differential equations (I Sem).

    ii.   Move the Transient phenomenon at the end of module(I Sem).

    iii.   Move the Transistor Biasing before FET (I Sem).

    iv.   In the biasing include FET biasing techniques (I Sem).

    v.   Combine the module 3 and 4 in II Sem and reduce the hrs.

    vi.   Remaining hrs can be allotted for digital electronics in II Sem.

    vii.   Include a reference book on Power Electronics by Rashid and Basic Electronics by H S Aravind.

7. Prof. Malatesh Akkur, Jain University suggested few more things along with the above suggestions:

    i.   To include some portion on digital electronics in I and II Sem.

    ii.   Combine module 1 and 2 of I sem in order to include digital electronics.

    iii.   Title of the paper to be changed as Basic Electronics-I and Basic Electronics-II.

    iv.   Correspondingly lab experiments should be changed.

    v.   Include Book on Digital Electronics by Floyd as a text book.

8. Sri Shivkumarayya, EI Labs India Pvt.Ltd., Embedded software design engineer gave the said that the syllabus we framed is equivalent to engineering syllabus.

9. The discussion was very fruitful and helpful for us to make teaching of electronics more effectively.

10. All the suggestions were considered and respective changes have been made.

With above suggestions the syllabi for B.Sc. I and II semester courses in Electronics was accepted by the Board of Studies.

HOD of Electronics

Approved Syllabus Abstract

Semester I (June 2015 onwards)
ELE T1: BASIC ELECTRONICS-I

Total Hrs: 54 hrs

Objective: After studying this paper the students will be able to analyse the circuits using Network theorems, analyse the Series and parallel resonant circuits, analyse the BJT and FET circuits, analyse the BJT and FET Amplifier circuits, importance of digital electronics.

Module 1: Analysis of DC and AC circuits   **15 hrs**
- Network Analysis:

  Convention for describing a network¸ Network equations: mesh analysis, nodal analysis, Problems. T and л networks: Inter -conversions, problems. Network Theorems, Transient phenomenon.
- AC Circuits: RL series and RC series circuits: problems.

Module 2:   **15 hrs**
- Transistor and Biasing:
- Field Effect Transistor (FET):
- Small Signal Amplifiers:

Module 3:   **12 hrs**
- Multistage Amplifiers:
- Large Signal amplifiers:

Module 4:   **12hrs**
- Digital Electronics: Number System, operations, 1's and 2's Complements, Basic Logic gates, Boolean algebra- Laws and Theorems, NAND and NOR gates (Logic symbols and Truth tables), De Morgan's theorems, NAND and NOR as Universal gates.

TEXTBOOKS:
1. Fundamentals of Electronics, B. Basavaraj-revised, Onkar Publications.
2. Electronic Devices and circuit theory, Robert Boylstead and Louis Nashelsky-PHI
3. Digital Fundamentals: Floyd-UBS publishers

REFERENCE BOOKS:
1. Basic Electronics and Linear circuits, N.N. Bhargava, D.C Kulshresta and D.C. Gupta- TMH.
2. Network Analysis by Hayte and Kimmerly.
3. Applied electronics, R.S.Sedha S. Chand & Company limited.
4. Network Analysis by Godse

Practical-L1
Lab in Basic Electronics -I (Any eight)

1. Verification of KCL and KVL for D.C network.
2. Verification of Thevenin's theorem.
3. Verification of Maximum power transfer theorem.
4. T to л and л to T conversion.
5. Series and Parallel resonance circuit- determination of resonant frequency, Bandwidth and Q-factor.
6. CE Characteristics.
7. CE amplifier.
8. CC amplifier.
9. CS amplifier.
10. Tuned Amplifier.
11. Multistage RC coupled Amplifier (Demo experiment)

ELE T2: BASIC ELECTRONICS-II

Total Hrs: 54 hrs

Objectives: After studying this paper the students will be able to analyse the feedback amplifier circuits, to analyse the oscillator circuits, to analyse the Power amplifier circuits, to analyse the UJT and SCR circuits, to analyse the Operational Amplifier circuits to analyse the combinational circuits, to simplify the Boolean functions using Boolean algebra and K-map technique, realize the combinational circuits.

Module 1:   **14 hrs**
- Differential amplifier:
- Feedback in amplifiers:

Module 2:   **13 hrs**
- Applications of Operational amplifier: Adder, Integrator, Differentiator, Comparators: Schmitt trigger, Active filters, Oscillators, Multivibrators.

Module 3:   **14hrs**
- Introduction to Power Electronics:
- Power Semiconductor Diodes and Transistors:
- Thyristors:

Module 4:   **13hrs**
- Simplification of Logic Expressions,
- Combinational Logic Circuits

 TEXTBOOKS:

1. Operational amplifiers and Linear Integrated circuits, Ramakanth Gayakwad-PHI 5th edition.
2. Power Electronics by Bhimra
3. Digital Fundamentals: Floyd-UBS publishers

REFERENCE BOOKS:
1. A Simplified approach by Anand Murthy and Nattarasu.
2. Basic Electronics and Linear circuits, N.N. Bhargava, D.C Kulshresta and D.C. Gupta- TMH.

Practical-L2
Lab in Basic Electronics -II (Any eight experiments)

1. Non-inverting and inverting operational amplifier-ac response.
2. Inverting summer, Non-inverting summer and subtractor.
3. First order Active Low-Pass and High Pass filters using OP-AMP-Frequency response.
4. First order Active Band-Pass (narrow band) and Band Elimination (notch) filters using OP-AMP-Frequency response.
5. Phase shift oscillator/Wein bridge oscillator.
6. Colpitt's /Hartley oscillator.
7. SCR characteristics.
8. TRIAC Characteristics.
9. MOSFET Characteristics.
10. IGBT Characteristics.
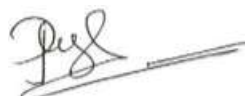11. RC Triggering Circuit – HWR and FWR.

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CHAIRPERSON, BOARD OF STUDIESIN ELECTRONICS
THE NATIONLA COLLAGE,AUTONOMOUS,
BASAVANAGUDI,BANGALORE-04