



Government of Karnataka  
Department of Collegiate Education



## **DEPARTMENT OF ELECTRONICS**

### **B.Sc. SEMESTER SCHEME CURRICULUM STRUCTURE IN ELECTRONICS STATE EDUCATION POLICY(SEP)**

**DSC I E (I-SEM): Electronic Devices and Circuits**

**DSC II E (II-SEM): OP-AMP and Linear Integrated Circuits**

**Academic Year: 2024-25 onwards**

**Government College(Autonomous)**

**Sedam Road**

**KALABURAGI – 585 105**



GOVT OF KARNATAKA  
Department of Collegiate Education  
**GOVERNMENT COLLEGE (AUTONOMOUS) KALABURAGI**  
(NAAC Reaccredited with ' B ' Grade)  
SEDAM ROAD, KALABURAGI – 585105



No.GCAK/ BOS(UG)/ ELE/SEP/2024-25/

Date:14-08-2024

**OFFICE ORDER**

**Sub : Appointment of Members of Board of Studies (UG) in ELECTRONICS**

**Ref : 1. UGC Revised Guidclines for Autonomous College dt.19.01.2018**

**2. Karnataka Govt. Order No: ED 166 UNE 2023, BENGALURU, Dt:08.05.2024**

**3. Registrar, GUK Letter No.GUK/BOS/2017-18/2547 dated 24/01/2018**

**4. Resolution of the DC meeting held on 14-08-2024**

\*\*\*

Advert to the above cited subject and references, the Board of Studies(UG) in ELECTRONICS has been constituted as shown below.

**BOARD OF STUDIES(UG) IN ELECTRONICS**

Sl. No.	Name of the Member	Designation	Address with Phone No & email	Appointed as
1	Prof. Srinivas Ramacharya	Assistant Professor	Department of Electronics Govt. College(A), Kalaburagi Cell No: 9480272509 Email: srcharyamalgi@gmail.com	Chairman
2	Dr. R. L. Raibagkar	Professor	Department of Applied Electronics, Gulbarga University Kalaburagi Cell No:9739302083 Email: rlraibagkar@rediffmail.com	University Nominee
3	Dr. Manjunatha Reddy H. K.	Associate Professor	Department of Electronics Govt. College(A), Kalaburagi Cell No: 9448823002 Email: manjunathareddy002@gmail.com	Member
4	Shaheen Fatima	Assistant Professor	Department of Electronics Govt. College(A), Kalaburagi Cell No: 9945152553 Email: @gmail.com	Member
5	Dr. Syeda Rafath Ara	Associate Professor	Department of Electronics Govt. College(A), Kalaburagi Cell No: 7026690786 Email: s.rafathara@gmail.com	Member
6	Dr. Rekha A	Associate Professor	Department of Electronics Govt. College(A), Kalaburagi Cell No: 9480420661 Email: @gmail.com	Member



7	Prof. S. R. Bharati	Assistant Professor	N.V. Degree College, Kalaburagi Email: 8904579722	External Member (Other than Parent University)
8	Prof. Y. N. Ravindra	Assistant Professor	Smt. V. G. Women's College Kalaburagi Cell no.9482677742	External Member (Other than Parent University)
9	Dr. Vinodkumar Rathod	Associate Professor	Govt. College(Autonomous), Kalaburagi. Cell No. 9448586111	External Member Representing Industry/Corporate Sector/Allied area
10	Prof. Shivakumar Kalaburagi	Assistant Professor	Govt. College(Autonomous), Kalaburagi. Cell No. 9845944421	External Member Representing Industry/Corporate Sector/Allied area
11	Dr. Nagraj Kulkarni	Associate Professor	Govt First College, Naubad Bidar Cell.No. 9449619203 Email: nagrajbolewad101@gmail.com	Alumni Member

PRINCIPAL

PRINCIPAL

Govt. College (Autonomous)  
KALABURAGI-585 105

Copy to:

1. Chairman, Board of studies (UG) in Electronics
2. All the members of BOS
3. Academic Dean(UG), Govt College(Autonomous), Kalaburagi
4. Office Copy



Government of Karnataka  
(Department of Collegiate Education)



# DEPARTMENT OF ELECTRONICS

Government College(Autonomous),Gulbarga

College Phone No:08472-245064

"Accredited by NAAC with A Grade"

Website: gcak.ac.in

Ref No: GCAK/BOS(UG)/2024-25/

Date:14.08.2024

The UG BOS Meeting was held on 14.08.2024 in the Department of Electronics, Government College (Autonomous),Kalaburgi. The following members were present in the meeting.

Sl.No	Name of the BOS member	Designation in the BOS	Signature
1	Srinivas Ramacharya	Chairman	
2	Prof. Dr.R L Raibagkar	University Nominee	
3.	Dr. H.K Manjunathreddy	Member	
4.	Smt. Shaheen Fatima	Member	
5.	Dr. Syeda Rafath Ara	Member	
6.	Dr. Rekha J Annigeri	Member	
7	Prof S R Bharati	External Member	
8	Sri. Y.N Ravindra	External Member	
9	Dr Nagraj Kulkarni	External Member(Alumni)	
10	Sri Shivakumar Kalaburgi	External Member	
11	Dr Vinod kumar Rathhod	External Member	

Following are the resolutions

1. The Chairman, UG, BoS in Electronics has mentioned the members
2. The B.Sc Syllabus for B.Sc I and II semester has been prepared by referring the Electronics syllabus submitted by State Level Syllabus committee -SEP-2024-25. The existing syllabus is partially modified within 20% in order to implement the Syllabus effectively. If any suitable corrections or modifications are needed, it will be incorporated by the Chairman of BOS.
3. The Question paper model (Note-If the examination branch/College prepares common Question paper model it will be followed) and the List Examiners in the Electronics subject is above prepared to carry out the confidential work of the predefined course and examination related works.
4. The meeting is ended with vote of thanks by the Chairman to all the internal, external University members.



# DNC I SEMESTER ELECTRONICS

Program Name	DNC - In Electronics	
Semester	First semester	
Course Title	Electronic Devices and Circuits	
Course Code	DNC 1E	No. of Credits: 4
Teaching hours	48 hours	Duration of Exam: 3 Hours
Formative Assessment Marks	20	Summative Assessment Marks: 80

## Course Objectives:

On completing the course, DNE - C1E, the students will be able to understand-

- Various semiconductor devices and their applications,
- Working principle of Regulators,
- Wave Shaping circuits,
- Bipolar and Unipolar devices,
- Analysis of different Network theory,
- Optoelectronic devices
- Measuring instruments

### Unit I: 12 Hours

**Semiconductor Diodes:** PN Junction diodes - construction, formation of depletion layer, I-V characteristics, Zener diode - Construction and IV Characteristics.

**Rectifiers:** Half Wave rectifier, Full Wave rectifier (centre tapped, Bridge rectifier) - circuit diagram, Working and waveforms, Expression for Ripple factor and Efficiency.

**Filters:** Shunt capacitor filter, its role in power supply, output waveform and working.

### Unit II: 12 Hours

**Voltage Regulators:** Block diagram of regulated Power supply, Line and Load regulation, Zener diode as voltage regulator.

**IC Voltage Regulators:** Fixed IC regulator - IC 78XX and IC 79XX, Variable IC regulators - IC LM 317 and LM 337 - pin diagram, circuit, working.

**Linear Wave shaping circuits:** RC and RL differentiator and Integrator - Expression for O/P Voltage and study of I/O waveforms.

**Non Linear Wave shaping Circuits:** Clippers - positive, negative, positive biased, negative biased and combinational clipper, Clampers - Positive and negative clampers; circuit diagram, working and I/O waveforms of all circuits.

### Unit III :

12 Hours

**Bipolar Junction Transistors (BJT):** Construction, Types, CE, CB, and CC configurations (mention only), V<sub>CE</sub>-I Characteristics of a transistor in CE mode, Regions of operation (Active, cut off and saturation), leakage currents (mention only), Current gains  $\alpha$ ,  $\beta$  and their interrelations, transistor as a Switch.

**Unipolar devices:** Junction Field Effect transistor (JFET) Types (Mention only), construction and working of N-Channel FET, Characteristics, FET Parameters and their relationships, Comparison of FET and BJT.

**Uni Junction Transistor (UJT):** Basic construction, working, I-V characteristics, Intrinsic stand-off ratio, UJT as a relaxation oscillator.

*Handwritten signature*

*Handwritten signature*

*Handwritten signature*

*Handwritten signature*

**Uni Junction Transistor (UJT):** Basic construction, working, I-V characteristics, Intrinsic stand-off ratio, UJT as a relaxation oscillator.

**Unit V: 12 Hours**

**Network theorems:** Kirchhoff's Voltage law, Kirchhoff's current law, Voltage divider and current divider theorems, Thevenin's theorem, Norton's theorem, Maximum power transfer theorem.

**Optoelectronic Devices:** Construction and Working of LED, Photo diode, Photo transistor, Solar cell

**Measuring Instruments:** Block diagram of Function Generator, Cathode Ray Oscilloscope, Digital Multi Meter.

#### REFERENCE BOOKS:

1. Fundamentals of Electronics: B. Basavaraj -(Omkar Publications, Bangalore) revised edition 2002.
2. Principles of Electronics: V. K. Metha: Edition - 1995 (S. Chand & Company, New Delhi)
3. Fundamentals of Electrical and Electronics Engineering: B. L. Theraja- (S. Chand. and Co.: 3<sup>rd</sup>Ed.)
4. Basic Electronics and linear Circuits: N. N. Bhargava., D C Kulshresta and D C Gupta- TMH Publishers 4<sup>th</sup>Ed.
5. Electronic devices: David A Bell-Reston publishing Company/DB Tarapurwala Publishers.



