



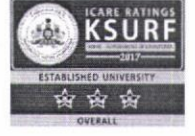
ಗುಲಬರ್ಗಾ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಕಲಬುರಗಿ.

ಜ್ಞಾನ ಗಂಗಾ, ಕಲಬುರಗಿ-585 106, ಕರ್ನಾಟಕ, ಭಾರತ

(ಕರ್ನಾಟಕ ರಾಜ್ಯ ವಿಶ್ವವಿದ್ಯಾಲಯಗಳ ಅಧಿನಿಯಮ 1976ರನ್ವಯ 10-09-1980 ರಂದು ಸ್ಥಾಪಿಸಲಾದ ವಿಶ್ವವಿದ್ಯಾಲಯ ಮತ್ತು 2000ರ ಅಧಿನಿಯಮದ ಅಡಿಯಲ್ಲಿ ಬದಲಾಯಿಸಿದಂತೆ)

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ವಿದ್ಯಾಮಂಡಲ



ಕ್ರ.ಸಂ.ಗುವಿಕ/ವಿಮವಿ/ಬಿಬಿಎಸ್/2024-25/177

ದಿನಾಂಕ: 23/7/24

ಅಧಿಸೂಚನೆ

ವಿಷಯ: ಸ್ನಾತಕ ಪದವಿ ಕೋರ್ಸಿನ ಅನ್ವಯಿಕ ವಿದ್ಯುದ್ವಿಜ್ಞಾನ ವಿಷಯದ ಪಠ್ಯಕ್ರಮ ಅನುಮೋದಿಸಿ 2024-25ನೇ ಶೈಕ್ಷಣಿಕ ಸಾಲಿನಿಂದ ಜಾರಿಗೊಳಿಸಿದ ಬಗ್ಗೆ.

ಉಲ್ಲೇಖ:1. ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ ಇಡಿ 166 ಯುಎನ್ಇ 2023 ಬೆಂಗಳೂರು, ದಿನಾಂಕ: 08.05.2024

2. ಅನ್ವಯಿಕ ವಿದ್ಯುದ್ವಿಜ್ಞಾನ ವಿಷಯದ ಸ್ನಾತಕ ಅಧ್ಯಯನ ಮಂಡಳಿಯ ನಿರ್ಣಯ
ದಿನಾಂಕ: 22.06.2024

3. ವಿಜ್ಞಾನ ನಿಕಾಯಗಳ ಸಮಿತಿ ಸಭೆಯ ನಿರ್ಣಯ ದಿನಾಂಕ: 11.07.2024

4. ವಿದ್ಯಾವಿಷಯಕ ಪರಿಷತ್ ಸಭೆಯ ಅನುಮೋದನೆ ದಿನಾಂಕ: 15.07.2024

5. ಮಾನ್ಯ ಕುಲಪತಿಗಳ ಅನುಮೋದನೆ ದಿನಾಂಕ:19.07.2024

ಸರ್ಕಾರದ ನಿರ್ದೇಶನದಂತೆ, 2024-25ನೇ ಶೈಕ್ಷಣಿಕ ಸಾಲಿನಿಂದ ಜಾರಿಗೊಳಿಸಿರುವ ಸ್ನಾತಕ ಪದವಿ ಪಠ್ಯಕ್ರಮವನ್ನು ಜಾರಿಗೊಳಿಸಬೇಕಾಗಿರುವ ಪ್ರಯುಕ್ತ ಅನ್ವಯಿಕ ವಿದ್ಯುದ್ವಿಜ್ಞಾನ ವಿಷಯದ ಅಧ್ಯಯನ ಮಂಡಳಿಯು ಪಠ್ಯಕ್ರಮವನ್ನು ಪರಿಷ್ಕರಿಸಿ ಶಿಫಾರಸ್ಸು ಮಾಡಿರುವುದರಿಂದ ಸದರಿ ಪಠ್ಯಕ್ರಮವನ್ನು ~~ಅನುಮೋದಿಸಿ~~ ನಿಕಾಯದ ಸಭೆಯಲ್ಲಿ ಒಪ್ಪಿಗೆ ಪಡೆದಿರುವಂತೆ, ವಿದ್ಯಾವಿಷಯಕ ಪರಿಷತ್ ಸಭೆಯ ಅನುಮೋದನೆಯಂತೆ ಪದವಿ ಕೋರ್ಸಿನ ಅನ್ವಯಿಕ ವಿದ್ಯುದ್ವಿಜ್ಞಾನ ವಿಷಯದ ಸ್ನಾತಕ ಪಠ್ಯಕ್ರಮವನ್ನು 2024-25ನೇ ಶೈಕ್ಷಣಿಕ ಸಾಲಿನಿಂದ ಅನ್ವಯವಾಗುವಂತೆ ಜಾರಿಗೊಳಿಸಲಾಗಿದೆ.

ಈ ಮಾಹಿತಿಯನ್ನು ಸಂಬಂಧಪಟ್ಟ ಶಿಕ್ಷಕರ ಹಾಗೂ ವಿದ್ಯಾರ್ಥಿಗಳ ಗಮನಕ್ಕೆ ತರಲು ಸೂಚಿಸಲಾಗಿದೆ. ಪಠ್ಯಕ್ರಮದ ವಿವರಗಳನ್ನು ಗುಲಬರ್ಗಾ ವಿಶ್ವವಿದ್ಯಾಲಯದ ವೆಬ್‌ಸೈಟ್ www.gug.ac.in ದಿಂದ ಪಡೆಯಬಹುದಾಗಿದೆ.

ಕುಲಸಚಿವರು

ಗುಲಬರ್ಗಾ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಕಲಬುರಗಿ

ಗೆ,

1. ಮುಖ್ಯಸ್ಥರು, ಅನ್ವಯಿಕ ವಿದ್ಯುದ್ವಿಜ್ಞಾನ ವಿಷಯದ ವಿಭಾಗ, ಗುಲಬರ್ಗಾ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಕಲಬುರಗಿ.
2. ಎಲ್ಲಾ ಪದವಿ ಕಾಲೇಜುಗಳ ಪ್ರಾಂಶುಪಾಲರುಗಳಿಗೆ.

ಪ್ರತಿಗಳು:

1. ಡೀನ್‌ರು, ಕಲಾ ನಿಕಾಯ, ಗುಲಬರ್ಗಾ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಕಲಬುರಗಿ ರವರ ಮಾಹಿತಿಗಾಗಿ.
2. ಕುಲಸಚಿವರು (ಮೌಲ್ಯಮಾಪನ) ಗುಲಬರ್ಗಾ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಕಲಬುರಗಿ
3. ನಿರ್ದೇಶಕರು, ಪಿಎಂಇಬಿ ಗುಲಬರ್ಗಾ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಕಲಬುರಗಿ ರವರ ಮಾಹಿತಿಗಾಗಿ.
4. ಗ್ರಂಥಪಾಲಕರು, ಗುಲಬರ್ಗಾ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಕಲಬುರಗಿ ರವರ ಮಾಹಿತಿಗಾಗಿ.
5. ವಿಜ್ಞಾನ ನಿಕಾಯದ ಎಲ್ಲಾ ಅಧ್ಯಯನ ವಿಭಾಗಗಳ ಮುಖ್ಯಸ್ಥರಿಗೆ ಗು.ವಿ. ಕಲಬುರಗಿ
6. ಸಂಯೋಜಕರು, ಟಾಸ್ಕ್‌ಫೋರ್ಸ್ ಸಮಿತಿ, ಗುಲಬರ್ಗಾ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಕಲಬುರಗಿ ರವರ ಮಾಹಿತಿಗಾಗಿ.
7. ವಿಶೇಷಾಧಿಕಾರಿಗಳು, ಆಡಳಿತ, ವಿದ್ಯಾಮಂಡಲ, ಪರೀಕ್ಷಾ, ಅಭಿವೃದ್ಧಿ ಗು.ವಿ. ಕಲಬುರಗಿ ರವರ ಮಾಹಿತಿಗಾಗಿ.
8. ಮುಖ್ಯಸ್ಥರು, ಗಣಕ ಕೇಂದ್ರ, ಗು.ವಿ. ಕಲಬುರಗಿ ರವರಿಗೆ ವೆಬ್‌ಸೈಟ್‌ನಲ್ಲಿ ಪ್ರತ್ಯೇಕ ಪೋರ್ಟಲ್‌ನಲ್ಲಿ ಪ್ರಕಟಿಸಲು ಸೂಚಿಸಲಾಗಿದೆ.
9. ನೋಡಲ್ ಅಧಿಕಾರಿಗಳು, UUCMS, ಗು.ವಿ.ಕಲಬುರಗಿ ಇವರ ಮಾಹಿತಿಗಾಗಿ
10. ಕುಲಪತಿಗಳ ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿ/ಕುಲಸಚಿವರ ಆಪ್ತ ಸಹಾಯಕರ ಗು.ವಿ. ಕಲಬುರಗಿ ರವರ ಮಾಹಿತಿಗಾಗಿ.



GULBARGA UNIVERSITY, GULBARGA
DEPARTMENT OF PG STUDIES & RESEARCH IN
APPLIED ELECTRONICS

B SC SEMESTER SCHEME
CURRICULUM STRUCTURE IN ELECTRONICS

DSC I E: Electronic Devices and Circuits

DSC II E: Op- Amp and Linear Integrated Circuits

DSC III E: Digital electronics

Elective 1: C- Programming

Elective 2: VHDL using Verilog


DSC IV E: Analog Communication

Elective 3: Electronic Instrumentation.

Elective 4: Internet of Things

DSC V E: Digital Communication.

DSC VI E: Embedded Systems.


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B SC I SEMESTER ELECTRONICS

Program Name	B. Sc. in Electronics	
Semester	First semester	
Course Title	Electronic Devices and Circuits	
Course Code	DSC IE	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, ELE –CT1, 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 theorems,
- 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 taped, 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 regulators - 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.


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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- I Characteristics of a transistor in CE mode, Regions of operation (Active, cut off and saturation), leakage currents (mention only), Current gains α , β 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.

Unit IV:

12 Hours

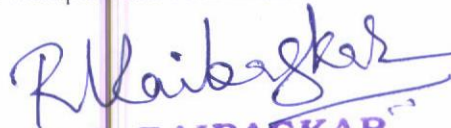
Network theorems: Kirchhoff's Voltage law, Kirchhoff's current law, Voltage divider and current divider theorems, Thevenin's theorem, Norton's theorem, Maximum power transfer theorem.

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.: 3rd Ed.)
4. Basic Electronics and linear Circuits: N. N. Bhargava., D C Kulshresta and D C Gupta- TMH Publishers 4th Ed.
5. Electronic devices: David A Bell-Reston publishing Company/DB Tarapurwala Publishers.


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Program Name	B. Sc. in Electronics	
Semester	First semester	
Course Title	Electronic Devices and Circuits Practicals	
Course Code	DSC-1E	No. of Credits: 2
Teaching hours / Week	4 hours/week	Duration of Exam: 3 Hours
Formative Assessment Marks	10	Summative Assessment Marks: 40

Note: Minimum 12 Experiments to be performed:

- 1) Study of V-I Characteristics of PN junction Diode.
- 2) Study of V-I Characteristics of Zener Diode,
- 3) Study of V- I characteristics of LED for two colours.
- 4) Study of V- I characteristics of Photo diode.
- 5) Study of V- I characteristics of Photo transistor
- 6) Study of V- I characteristics of Solar Cell
- 7) Half-wave rectifier without and with shunt capacitor filter, determine the ripple factor.
- 8) Full-wave rectifier without and with shunt capacitor filter, determine the ripple factor.
- 9) Study of regulated power supply using 78XX IC.
- 10) Study of Input and output characteristics of a transistor in CE configuration, determine the current gain.
- 11) Study of regulated power supply using LM317 IC.
- 12) Study of Zener diode as a voltage regulator.
- 13) Study of clipping circuits (Positive, Negative & Biased clippers).
- 14) Study of clamping circuits (Positive, Negative & Biased clampers).
- 15) Design RC differentiator and Integrator circuit and study the output waveforms.
- 16) Study of I/O characteristics of FET-determination of drain resistance, transconductance and amplification factor.
- 17) To study UJT as a relaxation oscillator, determination of η .
- 18) Verify Kirchoff's Voltage Law (KVL) and Kirchoff's current Law (KCL).
- 19) Verify Maximum Power transfer theorem.
- 20) Verify Thevenin's theorem.
- 21) Verify Norton's theorem.
- 22) Measurement of Frequency, time period and amplitude of waveforms using CRO.


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B SC II SEMESTER ELECTRONICS

Program Name	B. Sc. in Electronics	
Semester	Second semester	
Course Title	Op-Amp and Linear Integrated Circuits	
Course Code	DSC 2E	No. of Credits: 4
Teaching hours	48 hours	Duration of Exam: 3 Hours
Formative Assessment Marks	20	Summative Assessment Marks: 80

Course Objectives:

On completion of the course, ELE –CT2, the students will be able to understand –

- Concept of feedback and amplifiers,
- Types of oscillators
- Op-Amp and its applications
- IC 555 and its applications

Unit I: Feedback concept and Amplifiers:

12 Hours

Feedback Concept: Types of feedback - Positive and Negative feedback, advantages of negative feedback (Qualitative only). voltage gain of feedback amplifier

Transistor Biasing: dc load line and Q point, Fixed bias and voltage divider biasing network, Thermal Runaway, Stability Factor (S).

Amplifiers – Classification of Amplifiers based on different Criteria, Small signal CE amplifier, RC coupled amplifier, Transformer coupled amplifier, Direct coupled amplifier-their circuit diagrams and frequency response, advantages and disadvantages for each.

Power and Tuned Amplifiers: Difference between voltage and power amplifiers, classification of power amplifiers- Class A, Class B, Class C and their comparisons


Tuned amplifier: Single tuned amplifier - circuit diagram, working and frequency response, bandwidth, Q-factor

Unit II: Oscillators:

12 Hours

Introduction: Basic principles of oscillators- Tank Circuit-Barkhausen criteria

LC oscillators: Hartley and Colpitts Oscillator using transistors- expression for frequency of oscillations. (Construction and working)


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RC oscillator: Phase shift oscillator, Wein bridge and crystal oscillators using transistors-expression for frequency of oscillations.

Unit III: Operational Amplifier (Op-Amp):

12 Hours

Operational Amplifier (Op-Amp): Differential Amplifier: Emitter coupled Differential Amplifier- Common mode and Differential Mode.

IC 741: Block diagram of Op-Amp, Pin diagram of Op-Amp, Ideal and Practical Characteristics of an Op-Amp, Closed Loop Voltage gain for Inverting and Non inverting amplifier.

Op-Amp Applications: Op-Amp as Adder, Subtractor, Differentiator, Integrator, Comparator and Zero Crossing Detector.

Unit IV: Filters and Waveform Generators:

12 Hours

Active Filters: First Order high Pass, Low Pass Butterworth Filters

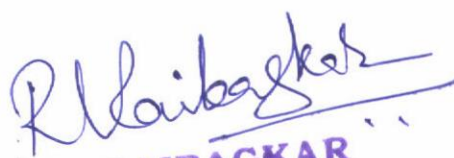
Oscillators using Op-Amp: Phase shift Oscillator, Wein bridge oscillator

Waveform Generators using op-amp: AMV, MMV.

IC 555 Timer: Block diagram, PIN diagram, Astable Multivibrator and Monostable multivibrator and Schmitt trigger.

REFERENCE BOOKS:


1. Applied Electronics: R. S. Sedha- S. Chand Pub. 3rd Edition.
2. Op-amps and Linear Integrated circuit, R.A. Gayakwad, 4th Edition, 2000, Prentice Hall
3. Principles of Electronics: V. K. Mehta. (S. Chand. Publication, 2002)
4. Electronic devices and circuit theory: Robert Boylest and Louis Nashelsky-PHI 5th Ed.
5. Electronic devices: David A Bell-Reston publishing Company/DB Tarapurwala Publ.
6. Fundamentals of Electronics: B. Basavaraj-(Omkar Publishers Bangalore, Revised edition 2002.
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Program Name	B. Sc. in Electronics	
Semester	Second semester	
Course Title	Electronic Circuits Practicals	
Course Code	ELE-CP2	No. of Credits: 2
Teaching hours/Week	4 hours/week	Duration of Exam: 3 Hours
Formative Assessment Marks	10	Summative Assessment Marks: 40

Note: Minimum 12 Experiments to be performed

1. To study Fixed biasing method.
2. To study voltage divider biasing method.
3. To study single stage CE amplifier.
4. To study two stage RC coupled amplifier.
5. To study single tuned amplifier.
6. To study the Hartley oscillator using transistor.
7. To study the Colpitts oscillator using transistor
8. To study the Phase Shift oscillator using transistor.
9. To study the Crystal oscillator and determine the frequency of practically.
10. Study of inverting and noninverting amplifier using op-amp, determination of gain.
11. Study of op-amp as an adder.
12. Study of op-amp as subtractor.
13. Study of op-amp as a differentiator.
14. Study of op-amp as an Integrator.
15. Study of first order Butterworth Low pass filter.
16. Study of first order Butterworth High pass filter.
17. To study the Phase Shift oscillator using op-amp.
18. To study the Wein Bridge oscillator using op-amp.
19. To study AMV using op-amp.
20. To study MMV using op-amp.
21. To study AMV using IC 555.
22. To study Schmitt Trigger using IC 555.


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