



Visvesvaraya Technological University

"Jnana Sangama" Belagavi-590018, Karnataka State, India

Dr. A. S. Deshpande B.E., M.Tech., Ph.D.
Registrar

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Ref: VTU/BGM/Aca/A9/2020-21/ 5475

Dated: **21 JAN 2021**

CIRCULAR

Subject: Clarification regarding OPEN ELECTIVE subjects regarding...

Reference:

1. Telephonic enquiry from colleges
2. 2018 scheme for 6th and 7th semester

Open Elective subjects are offered to the students of 6th and 7th semesters of the B.E./ B.Tech., programmes of 2018 scheme. All the colleges are hereby informed to note the following points in connection with open elective subjects-

Students can select any one of the open electives offered by other Departments expect those that are offered by the parent Department.

Selection of an open elective shall not be allowed if,

- The candidate has studied the same course during the previous semesters of the programme.
- The syllabus content of open elective is similar to that of the Departmental core courses or professional electives.
- A similar course, under any category, is prescribed in the higher semesters of the programme.

Registration to electives shall be documented under the guidance of Programme Coordinator/ Advisor/Mentor.

The principals are informed to bring this to the notice of all the concerned and advice the students accordingly.

Sd/-
REGISTRAR

To,

All the Principals of Constituent / Affiliated Engineering Colleges coming under the ambit of University.

Copy to:

1. The Hon'ble Vice-Chancellor through the Secretary to VC VTU Belagavi
2. The Registrar (Evaluation) for information.
3. The Special Officer, Academic Section, VTU Belagavi, for information.
4. The Special Officer CNC section to upload the circular on the VTU web portal.

✓

Principal

Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

21.01.2021
REGISTRAR
77.



ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ

"ವಿಷಯ ಅಧಿನಿಯಮ ೧೯೯೪"ರ ಅಡಿಯಲ್ಲಿ, ಕರ್ನಾಟಕ ಸರ್ಕಾರದಿಂದ ಸ್ಥಾಪಿತವಾದ ರಾಜ್ಯ ವಿಶ್ವವಿದ್ಯಾಲಯ
"ಜ್ಞಾನ ಸಂಗಮ", ಬೆಳಗಾವಿ-೫೯೦೦೧೮, ಕರ್ನಾಟಕ, ಭಾರತ

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Ref: VTU/BGM/BOS/A9/2020-21 /೩೧

Date: **8 APR 2021**

CIRCULAR

Subject: New Open Elective Subjects added to the existing list of B.E. in ECE/TCE program's Syllabus (2018 scheme) regarding.

Reference:

1. Chairperson BOS in ECE email dated 06.04.2021
2. Hon'ble Vice-Chancellor's approval dated 08.04.2021

Concerning the subject cited above, the OPEN Elective subjects are added to the existing list in the scheme and Syllabus of B.E. in Electronics & Communication Engineering and Electronics & Telecommunication Engineering programs. The complete list of subjects along with the syllabus of added subject is enclosed with this circular for kind reference to the concerned. And also uploaded on the VTU web portal

@ <https://vtu.ac.in/en/category/administration-circulars/> and updated syllabus with addition open elective subjects @ <https://vtu.ac.in/en/b-e-scheme-syllabus/#menu0>

All the Principals of Engineering Colleges are hereby requested to inform the faculty of the ECE/TCE to counsel the students regarding the OPEN elective subjects.

Encl: As mentioned above

Sd/-
REGISTRAR

To,

- All the Principals of the Engineering Colleges under the ambit of VTU Belagavi.

Copy to:

1. The Registrar(Evaluation) for information and needful
2. The Registrar's Office, VTU, Belagavi, for information.
3. The Special Officer, Academic Section, VTU Belagavi, for information.
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UG Programmes - 2018 Scheme & Syllabus

Purpose: **Additional Open Electives** offered by the Department of **Electronics and Communication Engineering (ECE) & Electronics and Telecommunication Engineering (TCE)**

VI Semester Open Elective A

Sl. No.	Course Code	Subject	Remarks
1	18EC651	Signal Processing	Existing
2	18EC652	Sensors & Signal Conditioning	Existing
3	18EC653	Virtual Instrumentation	Newly Added
4	18EC654	Microcontrollers	Newly Added
5	18EC655	Basic VLSI Design	Newly Added

VII Semester Open Elective B

Sl. No.	Course Code	Subject	Remarks
1	18EC751	Communication Theory	Existing
2	18EC752	Neural Networks	Existing
3	18EC753	ARM Embedded Systems	Newly Added
4	18EC754	Digital Systems Design using VHDL	Newly Added



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Ref: VTU/BGM/BOS/A9/2020-21 / 31

Date: - 2 APR 2021

CIRCULAR

Subject: Updated Open Elective Subjects syllabus in B.E. in Biotechnology of 2018 scheme regarding.

Reference:

1. Chairperson BOS in Biotechnology email dated 26.03.2021 and BOS Proceedings dated 12.02.2021
2. Hon'ble Vice-Chancellor's approval dated 31.03.2021

Concerning the subject cited above, the OPEN Elective subjects' syllabi of B.E. in Biotechnology program(2018 scheme) are updated. The complete list of subjects along with the syllabus is enclosed with this circular for kind reference to the concerned. And also updated scheme and syllabus is uploaded on the VTU web portal @ <https://vtu.ac.in/en/b-e-scheme-syllabus/#menu0>

All the Principals of Engineering Colleges are hereby requested to inform the faculty of the Biotechnology department to counsel the students regarding the OPEN elective subjects
Encl: As mentioned above

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ANNEXURE -1

REVISED CONTENTS FOR THE OPEN ELECTIVES -1

Open Elective -A	
Course code under 18BT65X	Course Title
18BT651	BIOLOGY FOR ENGINEERS (syllabus Modified)
18BT652	BIOMATERIALS (syllabus Modified)
18BT653	NANOBIOTECHNOLOGY (syllabus Modified)

B.E BIOTECHNOLOGY Outcome Based Education (OBE) and Choice Based Credit System (CBCS) SEMESTER - VI			
BIOLOGY FOR ENGINEERS			
Course Code	18BT651	CIE Marks	40
Teaching Hours/Week (L:T:P)	(3:0:0)	SEE Marks	60
Credits	03	Exam Hours	03
Course Objectives: <ul style="list-style-type: none"> To know the fundamentals of biological cellular systems and related class of biomolecules involved. To learn about the various bioengineering applications as case studies. To explore solving biological problems with engineering knowledge and tools. 			
Module-1			
BASIC CELL BIOLOGY: Introduction to Biology and Bioengineering concepts, The cell structure (Prokaryotes and Eukaryotes), Cell types (microbial, plant, animal) and their Cell Organelles (Nucleus, Endoplasmic reticulum, Golgi apparatus, Mitochondria, Chloroplast, Lysosome, Peroxisome etc.), Cell cycle and cell division (Mitosis and Meiosis), Factors affecting cell growth (Prokaryotes - Bacteria and Eukaryotes - Somatic Cells), Stem cells - types and their applications. Cancer and its types (carcinoma, sarcoma, melanoma, lymphoma, and leukemia), Cell staining and imaging (Gram staining, Fluorescence staining), cell sorting and counting (FACS - its principle and instrumentation).			
Module-2			
BIOMOLECULES: Qualitative information about Biomolecules (Carbohydrates, Lipids, Amino acids and Proteins, Nucleic acids - classification, source and their functions. Vitamins and Hormones - types and functions (qualitative). Bonds in Biomolecules (covalent and non-covalent); basic unit of life: double helical structure of DNA, Central dogma of biology: DNA to RNA to Protein; DNA Replication (qualitative), Protein synthesis - Transcription and translation as a flow diagram, Protein architecture (primary, secondary, tertiary and quaternary with examples) and their specific-functions.			
Module-3			
ENZYMES AND APPLICATIONS: Enzymes and classification (6 classes), comparison of chemical catalysts and enzymes, Active site, Enzyme action (Lock & key and Induced fit hypothesis), Catalysis - factors affecting (temperature, pH, substrate concentration, Enzyme concentration and inhibitors - reversible and irreversible), Enzyme Immobilization and their applications, Applications of enzymes (cellulases in textile and paper industry, amylases food and baking industry, proteases in food and leather industry, lipases in detergents and biofuels, carbonic anhydrase in fermentation industry, restriction enzymes in genetic engineering). Enzymes in glucose biosensor and urea biosensor.			
Module-4			
BIOMATERIALS AND BIOMECHANICS: Introduction, Biomaterials and its properties, scaffolds and body implants. Collagen, silk fibroin, heparin and heparin-like polysaccharides, proteoglycans, microbial glycosaminoglycan, Gelatin - their			