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REF: VTU/BGM/BoS/Conf/2023-24/ 2079

DATE: -6 AUG 2024

## CIRCULAR

Sir/ Madam,

**Subject: Regarding the Teaching Department for Course/Subject-Biology for Engineers regarding**

**Reference: Clarification requested over phone call from the affiliated college faculty.  
The Hon'ble Vice-Chancellor's approval dated: 05.08.2024**

Biology is an increasingly important subject for engineers due to the growing intersection of biological sciences with engineering disciplines. Here are several reasons why biology is crucial for engineers:

- 1. Biotechnology and Bioengineering:** Engineers working in biotechnology need a solid understanding of biological systems to design and develop medical devices, pharmaceuticals, and diagnostic tools. Bioengineering applications include tissue engineering, synthetic biology, and genetic engineering.
- 2. Biomedical Engineering:** This field merges engineering principles with biological and medical sciences to create technologies that improve healthcare. Knowledge of biology is essential for developing prosthetics, medical imaging devices, and artificial organs.
- 3. Environmental Engineering:** Environmental engineers often deal with biological processes to address issues like waste management, water purification, and pollution control. Understanding microbial processes and ecosystems is vital for designing sustainable solutions.
- 4. Agricultural Engineering:** This area focuses on improving agricultural practices through technology. Knowledge of plant biology, genetics, and soil science helps engineers develop better farming equipment, irrigation systems, and crop management techniques.
- 5. Biomaterials:** Engineers working with biomaterials need to understand biological interactions with materials used in medical implants, tissue scaffolds, and drug delivery systems. Biological compatibility and biodegradability are critical factors in material design.
- 6. Biomechanics:** This field applies principles of mechanics to biological systems, studying movement and mechanical properties of living organisms. It is essential for designing orthopedic devices, sports equipment, and understanding human and animal locomotion.
- 7. Energy Production:** Bioengineering plays a role in developing biofuels and renewable energy sources. Understanding metabolic pathways and microbial processes can lead to more efficient production of bioenergy.
- 8. Nanotechnology:** Nanobiotechnology involves the use of nanomaterials and nanodevices in biological applications. Engineers need knowledge of molecular biology to create nanoscale devices for drug delivery, imaging, and diagnostics.
- 9. Interdisciplinary Innovation:** The integration of biology with engineering fosters interdisciplinary innovation, leading to new technologies and solutions that address complex global challenges such as climate change, food security, and public health.
- 10. Ethics and Sustainability:** Engineers need to understand the ethical implications and sustainability aspects of their work in biological contexts. This includes considering the impact of engineered products on ecosystems and human health.

In summary, a strong foundation in biology equips engineers with the knowledge and skills necessary to work at the interface of biology and technology, driving advancements in healthcare, environmental sustainability, agriculture, and beyond.

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Therefore, it is recommended that faculty from Chemistry, Chemical Engineering, Biotechnology, Biology, and related fields are better suited to effectively teach the course. If faculty from these disciplines are unavailable, the college may consider hiring them on an ad hoc basis to ensure the quality of the teaching-learning process.

All principals of affiliated or constituent engineering colleges and chairpersons of university departments are hereby informed to note the same.

Sd/-  
REGISTRAR

**To,**  
**All the Principals of Engineering Colleges under the ambit of the University**  
**All the Chairpersons/Program Coordinators of University Departments at Kalburgi, Mysuru, Bengaluru, and Belagavi**

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