



Sapthagiri College of Engineering
(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi)
#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru – 560057
Phone: 080-28372800/1/2 www.sapthagiri.edu.in Fax: 080-28372797

AY 2020-21

Department of Biotechnology

1.3.1 Institution integrates cross-cutting issues relevant to Gender, Environment and Sustainability, Human Values and Professional Ethics into the Curriculum

PROGRAM EDUCATIONAL OBJECTIVES (PEO)

The program educational objectives of Bachelor of Engineering in Biotechnology at Sapthagiri College of Engineering are broadly defined on following four counts.

PEO 1: Students will be in lucrative professionals in different sectors of Biotechnology fields with high proficiency in multidisciplinary tasks.

PEO 2: Operate technically at competent level in concocting problems of biotechnology and utilize the knowledge to develop Biological processes and Bio-techniques.

PEO 3: Students will endure higher education with harmonious combination of the skills of engineering, management & life science

PEO 4: Students will inculcate Socio-ethical values, exhibit professionalism, team spirit for lifelong learning and well-being of society and mankind.

PROGRAM SPECIFIC OUTCOMES (PSO)

At the end of the B.E Biotechnology engineering program, the students are expected to have developed the following program specific outcomes.

PSO 1: The graduates will have the ability to plan, analyze, design, execute and contribute to the field of biotechnology and allied industries designing, developing and providing solutions for product/processes/technology development.

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PSO 2: The graduates of Biotechnology engineering program will have the ability to take up employment, entrepreneurship, research and development for sustainable society.

PSO 3: The graduates will be able to pursue opportunities for personal and professional growth, higher studies, demonstrate leadership skills and engage in lifelong learning by active participation in the Biotechnology profession.

PSO 4: The graduates will be able to demonstrate professional integrity and an appreciation of ethical, environmental, regulatory and issues related to Biotechnology.

PROGRAM OUTCOMES(POs)

Program outcomes are narrower statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge and behavior. Graduation of **Bachelor of Biotechnology** program at Sapthagiri College of Engineering will attain the following program outcomes **in the field of Biotechnology**.

PO 1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO 2. Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO 3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO 4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

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PO 6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO 7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO 8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.


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Courses that integrates with Gender, Environment and Sustainability, Human Values and Professional Ethics into the Curriculum.

Sl.No.	Subject Name /Code	Beyond Syllabus	Innovative teaching methods / ICT Tools Used	Deployment Strategy and Tool	Cross-cutting issues integrated	PO	PSO
1.	18BT32/ Microbiology	Seminar	Google Classroom and Google meet	Chalk and Talk method PPT, Project work, Internship	Environmental Sustainability	PO1,2,3,4,6,7,9,10,11,12	PSO1,2,3,4
2.	18BT33 /Unit Operations	-----	Google Classroom and Google meet	Chalk and Talk method PPT	Environmental Sustainability	PO1,2,3,7,9,10,11	PSO 1,2,3,4
3.	18BT35/ Cell Biology and Genetics	-----	Google Classroom and Google meet	Chalk and Talk method, PPT	Human values	PO1,2,3,4,8,9,11	PSO1,2,3,4
4.	18BTL37/Microbiology Laboratory	Conduction of new experiments which are beyond the syllabus	Google Classroom and Google meet	Chalk and Talk method PPT, Project and internship	Environmental Sustainability	PO1,2,3,4,6,7,9,10,11,12	PSO1,2,3,4
5.	18BTL38 /Unit Operations Laboratory	-----	Google Classroom and Google meet	Chalk and Talk method PPT	Environmental Sustainability	PO1,2,3,7,9,10,11	PSO 1,2,3,4
6.	18BT43 /Immunotechnology	-----	Google Classroom and Google meet	Chalk and Talk method PPT, NPTEL videos	Human values	PO1,2,3,6,8	PSO1,2,3,4
7.	18BT44/ Cell Culture Techniques	-----	Google Classroom and Google meet	Chalk and Talk method PPT	Environmental Sustainability	PO 1,2,7,10,12	PSO1,2,3,4
8.	18BTL48/ Immunotechnology Laboratory	-----	Google Classroom and Google meet	Chalk and Talk method PPT	Human values	PO1,2,3,6,8	PSO1,2,3,4
9.	18BT51/ Bio-Business and Entrepreneurship	-----	Google Classroom and Google meet	Chalk & talk, PPT, webinars,	Professional ethics	PO1,2,3,6,8	PSO1,2,3,4
10.	18BT52 /Chemical Reaction Engineering	-----	Google Classroom and Google meet	Chalk and Talk method	Environmental Sustainability	PO 1,2,3,5,6,7	PSO1,2,4

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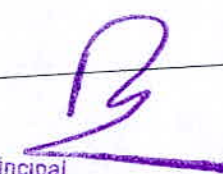
11.	18BT54/ Genomics & Proteomics	-----	Google Classroom and Google meet	PPT Chalk and Talk method You tube	Human Value and Professional ethics	PO1,2,3,4,8,9,11	PSO1,2,4
12.	18BT56 /Genetic Engineering & Applications	-----	Google Classroom and Google meet	Chalk and Talk method, NPTEL Videos, PPT	Ethical issue- Human values	PO1,2,3,6,8	PSO1,2,3,4
13.	18BTL58/ Genetic Engineering and Cell Culture Laboratory	Conduction of new experiments which are beyond the syllabus	Google Classroom and Google meet	Chalk and Talk method, NPTEL Videos, PPT	Ethical issue- Human values	PO3,6,8	PSO1,2,3,4
14.	18BT61 /Process Control & Automation Chemical	-----	Google Classroom and Google meet	Chalk and Talk method PPT	Environmental Sustainability	PO1,2,3,4,5,6,7,9,10,11,12	PSO1,2,3,4
15.	18BT62 /Bioprocess Equipment Design & CAED	-----	Google Classroom and Google meet	Chalk and Talk method PPT	Environmental Sustainability	PO1,2,3,4,5,7,9,10,12	PSO1,2,3,4
16.	18BTL66 /Process Control & Automation Laboratory	-----	Google Classroom and Google meet	Chalk and Talk method PPT	Environmental Sustainability	PO1,2,3,4,5,7,11	PSO1,2,4
17.	18BTMP68 /Mini-project	-----	Google Classroom and Google meet	PPT	Environmental Sustainability Human Value and Professional ethics	PO1,2,3,4,5,6,7,8,9,10	PSO1,2,3,4
18.	17BT72 Genomics and proteomics	-----	Google Classroom and Google meet	Chalk and Talk method, NPTEL Videos, PPT	Human Value and Professional ethics	PO1,3,6,8	PSO1,2,3,4
19.	17BT754 Forensic science	Group Discussion and case studies	Google Classroom and Google meet	Chalk and Talk method PPT	Human Value and Professional ethics	PO1,2,4,6,8,10	PSO1,2,4
20.	17BTL76 Fermentation technology Lab	-----	Google Classroom and Google meet	Chalk and Talk method PPT	Environmental Sustainability	PO1,2,3,4,7,11	PSO1,2,3,4

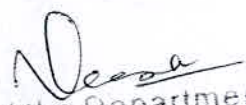


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21.	17BTL78 Project phase 1 + Seminar	-----	Google Classroom and Google meet	PPT	"Environmental Sustainability Human Value and Professional ethics"	PO1,2,3,4,5,6,7,8,9,10	PSO1,2,3,4
22.	17BT82 Regulatory affairs in Biotechnology	-----	Google Classroom and Google meet	Chalk and Talk method PPT	Human Value and Professional ethics	PO1,2,3,4,6,8,11,12	PSO1,2,4
23.	17BT833 Environmental biotechnology	-----	Google Classroom and Google meet	Chalk and Talk method PPT	Environmental Sustainability	PO1,2,3,4,7,9,11	PSO1,2,4
24.	17BT84 Internship/professional Practices	-----	Google Classroom and Google meet	PPT	Human Value and Professional ethics	PO1,2,3,4,5,6,8,9,10	PSO1,2,3,4
25.	17BT85 Project work Phase	-----	Google Classroom and Google meet	PPT	"Environmental Sustainability Human Value and Professional ethics"	PO1,2,3,4,5,6,7,8,9,10	PSO1,2,3,4
26.	17BTL86 Seminar	-----	Google Classroom and Google meet	PPT	"Environmental Sustainability Human Value and Professional ethics"	PO1,2,3,4,5,6,7,8,9,10	PSO1,2,3,4


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DEPARTMENT OF ECE
Curriculum Plan & Deployment 2020-21

SL.No.	Subject Name /Code	Beyond Syllabus	Innovative teaching methods / ICT Tools	Deployment Strategy and Tool	Cross-cutting issues integrated	PO, PSO
1	Technological Innovation Management and Entrepreneurship / 18EC51		(i) Youtube video on successful entrepreneurs, Business Plan, How to start a business Simulation (ii) Google Classroom (iii) Google Meet	(i) PPT in Google Meet (ii) Youtube video on social responsibilities of Business towards society (iii) Youtube video on successful entrepreneurs, Business Plan, How to start a business	· Business Ethics · Human	PO7, PO8, PO9, PO10, PO11
2	Environmental Studies / 18CIV59	-	-	(i) PPT in google meet (ii) Google Classroom	Environment Sustainability	PO:1,7,8,9, 10,
3	Satellite Communication / 17EC755		(i) Google Classroom (ii) Google Meet	online google meet, Youtube	Environment Sustainability	PO1,PO2,PO3,PO4,PO10,PO11, PO12,PSO1,PSO2


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Department of Information Science & Engineering

1.3.1 Institution integrates cross-cutting issues relevant to Gender, Environment and Sustainability, Human Values and Professional Ethics into the Curriculum

PROGRAM EDUCATIONAL OBJECTIVES (PEO)

The program educational objectives of Bachelor of Engineering in Information science and Engineering at Sapthagiri College of Engineering are broadly defined on following four counts.

PEO 1: Graduates will be able to successfully gain theoretical and practical knowledge to identify and solve challenges in Information Science and Engineering.

PEO 2: Graduates will begin their career in IT industry, academia, management and research to engage in lifelong learning.

PEO 3: Graduates will exhibit inclination towards the needs of the society through ethics and service.

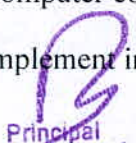
PROGRAM SPECIFIC OUTCOMES (PSO)

At the end of the B.E Information Science and Engineering program, the students are expected to have developed the following program specific outcomes.

PSO 1: Apply a sound fundamental knowledge in mathematics and physical sciences to Information Science and Engineering.

PSO 2: Analyze, design and evaluate computer components and information systems using technology with suitable platform.

PSO 3: Apply modern technology to implement in the components and its system.


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Department of Information Science & Engineering

PROGRAM OUTCOMES (POs)

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PO 1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO 2. Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

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PO 6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

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PO 8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

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Sl. No.	Subject Name/ Code	Beyond Syllabus	Innovative teaching methods / ICT Tools Used	Deployment Strategy and Tool	Cross-cutting issues integrated	PO, PSO
1	Software Engineering/ 18CS35	State modelling, Interaction modelling	Case studies, Activity diagram, sequence diagram, flow diagram	PPT, Google meet,GCR	Environmental Sustainability	POs: 1,2,3,4,5,8,9,10,12 PSOs:1,2,3
2	Management and Entrepreneurship / 18CS51	Project Design and Network Analysis, Modern Small Business Enterprises	PPT, Youtube videos	PPT, Zoom, Google class room	Human Values and Professional Ethics Environmental Sustainability	POs:6,7,8,9,10,11,12 PSOs:1,2,3
3.	Internet of things / 17CS81	Conduction of Case Studies in Simulation Tool Simul8	Demonstartion of Important concepts using Arena,Simul8	.PPT .Google meet .Google class room	Environmental Sustainability	POs:1,2,3,6,11,12 PSOs:1,2,3

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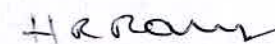
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4	Big data and Analytics / 17CS82	Hadoop Programs	Demonstration using simulator	PPT, Zoom, Google class room	Environmental Sustainability	POs: 1,2 PSOs: 1
5	Internship / 17IS84	Internship for the students to work on real time projects, need based projects.	PPT's	PPT's , Videos	Professional Ethics Environmental Sustainability	POs : 1, 2, 3 ,4, 5, 6, 7, 8, 9, 10, 11, 12 PSOs: 1,2,3
6	Project Work-I/II / 17ISP78/85	Projects for the students to work on real time projects, need based projects.	simulators	PPT's , Videos	Professional Ethics, Environmental Sustainability	POs : 1, 2, 3 ,4, 5, 6, 7, 8, 9, 10, 11, 12 PSOs: 1,2,3



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HOD

Dr H.R. Ranganatha
Prof. & H.O.D

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