

KUMARAGURU COLLEGE OF TECHNOLOGY, COIMBATORE – 641 049
REGULATIONS 2015(CBCS)
B.TECH BIOTECHNOLOGY
CURRICULUM

Semester-I

Code No.	Course Title	Category	Contact hours	L	T	P	C
THEORY							
U15ENT101	Technical English	HS	4	3	0	0	3
U15MAT101	Engineering Mathematics – I	BS	5	3	2	0	4
U15PHT101	Engineering Physics	BS	4	3	0	0	3
U15CHT101	Engineering Chemistry	BS	4	3	0	0	3
U15MET101	Engineering Graphics	ES	5	2	2	0	3
U15CST101	Structured Programming using ‘C’	ES	4	3	0	0	3
PRACTICAL							
U15CHP101	Chemistry laboratory	BS	3	0	0	2	1
U15MEP101	Engineering Practices Laboratory	ES	3	0	0	2	1
U15CSP101	Structured Programming Laboratory using ‘C’	ES	3	0	0	2	1
U15GHP101	Personal Values -1		1	1	0	0	1
	Total Hours /Credits		35				23

Semester-II

Code No.	Course Title	Category	Contact hours	L	T	P	C
THEORY							
U15ENP201	Business Communication and Personal Sk	HS	4	2	0	2	2
U15MAT201	Engineering Mathematics – II	BS	5	3	2	0	4
U15PHT206	Applied Physics	BS	3	3	0	0	3
U15CHT206	Chemistry for Biotechnology	BS	3	3	0	0	3
U15EET211	Basics of Electrical and Electronics	ES	4	3	0	0	3
U15BTT201	Biomolecules and Genetics	ES	3	3	0	0	3
PRACTICAL							
U15PHP201	Physics Laboratory	BS	3	0	0	2	1
U15CSP211	Computing Laboratory	ES	3	0	0	2	1
U15BTP201	Biomolecules and Genetics Laboratory	PC	3	0	0	2	1
U15GHP201	Personal Values -2	HS	1	1	0	0	1
U15SIP201	Social Immersion Project	HS	2	0	0	2	2
	Total Hours /Credits		28				24

Semester-III

Code No.	Course Title	Category	Contact hours	L	T	P	C
THEORY							
U15MAT308	Probability and Biostatistics	BS	4	3	1	0	4
U15BTT301	Concepts in Biochemistry	PC	3	3	0	0	3
U15BTT302	Microbiology	PC	3	3	0	0	3
U15BTT303	Stoichiometry and Fluid Mechanics in Bioprocess	PC	4	3	1	0	4
U15BTT305	Principles of Bioorganic chemistry	PC	3	3	0	0	3
U15GST006	Product design and development	ES	3	3	0	0	3
PRACTICAL							
U15BTP301	Biochemistry and bioorganic chemistry laboratory	PC	4	0	0	4	2
U15BTP302	Microbiology Laboratory	PC	4	0	0	4	2
U15GHP301	Family Values	HS	1	1	0	0	1
	Total Hours /Credits		29				25

Semester-IV

Code No.	Course Title	Category	Contact hours	L	T	P	C
THEORY							
U15EST006	Basic concepts in Environmental Science	MC	3	3	0	0	3
U15CSP204	Problem Solving Techniques - Non Circuit	PC	3	1	0	2	3
U15BTT402	Biotechniques	PC	3	3	0	0	3
U15BTT403	Food Process Engineering	PC	3	3	0	0	3
U15BTT404	Cell and Molecular Biology	PC	3	3	0	0	3
U15BTT405	Biothermodynamics	PC	3	3	1	0	4
PRACTICAL							
U15BTP401	Cell and Molecular Biology Laboratory	PC	3	0	0	3	1
U15BTP402	Unit Operations Laboratory	PC	3	0	0	3	1
U15BTP403	Food Technology and Biotechniques Laboratory	PC	3	0	0	3	1
U15GHP401	Professional Values	HS	1	1	0	0	1
	Total Hours /Credits		28				23

Semester-V

Code No.	Course Title	Category	Contact hours	L	T	P	C
THEORY							
U15BTT501	Genetic Engineering and Genomics	PC	3	3	0	0	3
U15BTT502	Enzyme Technology	PC	3	3	0	0	3
U15BTT503	Bioprocess Engineering	PC	3	3	0	0	3
U15BTT504	Heat and Mass Transfer in Bioprocess	PC	4	3	1	0	4
U15BTT505	Immunology & Microbial Pathogenesis	PC	3	3	0	0	3

OE	Open elective I *	OE	3	3	0	0	3
PRACTICAL							
U15ENP501	Communication Skill Laboratory	HS	3	0	0	3	1
U15BTP502	Enzyme Technology Laboratory	PC	3	0	0	3	1
U15BTP503	Genetic Engineering Laboratory	PC	3	0	0	3	1
U15BTP504	Immunology And Microbial Pathogenesis Laboratory	PC	3	0	0	3	1
U15GHP501	Social Values	HS	1	1	0	0	1
Total Hours /Credits			32				24

Semester-VI

Code No.	Course Title	Category	Contact hours	L	T	P	C
THEORY							
U15BTT601	Chemical Reaction Engineering	PC	4	3	1	0	4
U15BTT603	Bioprocess Instrumentation and Control	ES	3	3	0	0	3
U15GST005	Engineering Economics and Financial Management	ES	3	3	0	0	3
E1	Elective-I (A, B tracks)	PE	3	3	0	0	3
E2	Elective-II (A, B tracks)	PE	3	3	0	0	3
OE	Open Elective II*	OE	3	3	0	0	3
PRACTICAL							
U15BTP602	Bioprocess Engineering Laboratory	PC	3	0	0	3	1
U15BTP603	Plant Cell Culture Laboratory	PC	4	0	0	4	2
U15BTP604	Mammalian Cell Culture	PC	4	0	0	4	2
U15GHP601	National Values	HS	1	1	0	0	1
Total Hours /Credits			31				25

Semester-VII

Code No.	Course Title	Category	Contact hours	L	T	P	C
THEORY							
U15BTT701	Bioinformatics	PC	3	3	0	0	3
U15BTT702	Downstream Processing	PC	3	3	0	0	3
U15BTT703	Biopharmaceutical Technology and Regulatory Practices	PC	3	3	0	0	3
U15BTT704	Bioreactor Modeling and Simulation	PC	3	3	0	2	4
	Comprehensive Studies		0	0	0	0	3
E3	Elective III (C, D Tracks)	PE	3	3	0	0	3
OE	Open elective III*	OE	3	3	0	0	3
PRACTICAL							
U15BTP701	Bioinformatics Laboratory	PC	3	0	0	3	1
U15BTP702	Downstream Processing Laboratory	PC	3	0	0	3	1
U15BTP703	Project (Phase I)	EEC	4	0	0	4	2
U15GHP701	Global Values	HS	1	1	0	0	1
Total Hours /Credits			29				24

Semester-VIII

Code No.	Course Title	Category	Contact hours	L	T	P	C
THEORY							
E4	Elective IV (C, D tracks)	PE	3	3	0	0	3
PRACTICAL							
U15BTP801	Project (Phase II)	EEC	18	0	0	18	10
Total Hours /Credits			21				13

PC: Professional core; PE: professional electives; OE open electives; HS: humanities& sciences; BS: basic sciences; EEC: Employment enhancing courses; MC: Mandatory courses

* Students can choose courses offered by other departments

Only end semester exam will be held for comprehensive exam; Credit will be added only when the students undergo to the subject

Grand Total Credits 181

PROFESSIONAL ELECTIVES

Code No.	Course Title	Category	Contact hours	L	T	P	C
Elective I							
U15BTE101	Molecular Plant Breeding ^A	PE	3	3	0	0	3
U15BTE102	Food Quality And Safety Assurance ^A	PE	3	3	0	0	3
U15BTE103	Forensic Biotechnology ^B	PE	3	3	0	0	3
U15BTE104	Neurobiology And Cognitive Science ^B	PE	3	3	0	0	3
U15BTE105	Systems Biology ^B	PE	3	3	0	0	3
U15BTE106	IPR And Biobusiness Management*	PE	3	3	0	0	3

Code No.	Course Title	Category	Contact hours	L	T	P	C
Elective II							
U15BTE201	Food Biotechnology ^a	PE	3	3	0	0	3
U15BTE202	Biofertiliser And Biopesticide Development And Control ^A	PE	3	3	0	0	3
U15BTE203	Biotechnology of Value Added Foods ^A	PE	3	3	0	0	3
U15BTE204	Cancer Biology ^B	PE	3	3	0	0	3
U15BTE205	Stem Cells and Tissue Engineering ^B	PE	3	3	0	0	3
U15BTE206	Biomaterials ^b	PE	3	3	0	0	3
U15BTE207	Clinical Research & Data Management ^B	PE	3	3	0	0	3
U15GST002	Total Quality Management*	PE	3	3	0	0	3

Code No.	Course Title	Category	Contact hours	L	T	P	C
Elective III							
U15BTE301	Nanobiotechnology ^C	PE	3	3	0	0	3
U15BTE302	Bioprocess Economics and Plant Design ^C	PE	3	3	0	0	3
U15BTE303	Industrial Biosafety and Bioethics ^C	PE	3	3	0	0	3
U15BTE304	Environmental Toxicology and Occupational Health ^D	PE	3	3	0	0	3
U15BTE305	Environmental Biotechnology ^D	PE	3	3	0	0	3
U15GST003	Principles of Management*	PE	3	3	0	0	3

Code No.	Course Title	Category	Contact hours	L	T	P	C
Elective IV							
U15BTE401	Protein Structures and Engineering ^C	PE	3	3	0	0	3
U15BTE402	Structural Bioinformatics and Computer Aided Drug Design ^C	PE	3	3	0	0	3
U15BTE403	Environmental Biotechnology Risk and Impact Assessment ^D	PE	3	3	0	0	3
U15BTE404	Biofuels Engineering ^D	PE	3	3	0	0	3
U15BTE405	Green Technologies in Biotechnology ^D	PE	3	3	0	0	3
U15GST004	Operations Research*	PE	3	3	0	0	3

A- Track A: Agriculture/Food technology

B- Track B: Biomedical science & technology

C- Track C: Applied Biotechnology

D- Track D: Energy & Environmental Biotechnology

* - for electives I, II and III students can opt out of either Track A or B and take these non-track courses

OPEN ELECTIVES TO STUDENTS OF OTHER DEPARTMENTS							
U15BTOE01	Biology for Engineering	5	OE	3	3	0	3
U15BTOE02	Bioinformatics for Engineering	5	OE	3	3	0	3
U15BTOE03	Intellectual Property Rights	6	OE	3	3	0	3
U15BTOE04	Basic Physiology for Engineering	6	OE	3	3	0	3
U15BTOE05	Enzymes for Textile Processing	7	OE	3	3	0	3

ONE CREDIT INDUSTRY ORIENTED COURSES							
U15BTIN001	Dairy Technology	5/6/7	IN	2	2	0	1
U15BTIN002	Mushroom technology	5/6/7	IN	2	2	0	1
U15BTIN003	Pilot Plant and Industrial Fermentors	5/6/7	IN	2	2	0	1
U15BTIN004	Bioethanol Technology	5/6/7	IN	2	2	0	1

* 5th, 6th or 7th semesters