

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	3	3	0	0	3
U15MAT101	Engineering Mathematics – I	BS	5	3	2	0	4
U15PHT101	Engineering Physics	BS	3	3	0	0	3
U15CHT101	Engineering Chemistry	BS	3	3	0	0	3
U15MET101	Engineering Graphics	ES	6	2	4	0	4
U15CST101	Structured Programming using 'C'	ES	4	2	2	0	3
PRACTICAL							
U15PHP101	Chemistry Laboratory	BS	2	0	0	2	1
U15MEP101	Engineering Practices Laboratory	ES	4	0	0	4	2
U15CSP101	Structured Programming Laboratory using	ES	4	0	0	4	2
U15GHP101	Personal Values	HS	2	0	0	2	1
	Total Hours /Credits		36				26

Semester-II

Code No.	Course Title	Category	Contact hours	L	T	P	C
THEORY							
U15ENP201	Business Communication and Presentation Skills	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
U15CHT205	Chemistry for Biotechnology	BS	3	3	0	0	3
U15EET 211	Basics of Electrical and Electronics Engineering	ES	4	3	0	0	4
U15BTT201	Biomolecules and Genetics	PC	3	3	0	0	3
PRACTICAL							
U15PHP201	Physics Laboratory	BS	2	0	0	2	1
U15CSP211	Computing Laboratory	ES	4	0	0	4	2
U15BTP201	Biomolecules and Genetics Laboratory	PC	4	0	0	4	2
U15SIP201	Social Immersion Project	HS	2	0	0	2	2
	Total Hours /Credits		34				26

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
U15BTT304	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	3	0	0	3	1
U15BTP302	Microbiology Laboratory	PC	3	0	0	3	1
U15GHP301	Family Values	HS	1	1	0	0	1
	Total Hours /Credits		27				23

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
U15CSP202	Problem Solving Techniques	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	0	0	3
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				22

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
U15BTT602	Mammalian and Plant Cell Culture	PC	3	3	0	0	3
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							
U15BTP601	Mammalian and Plant Cell Culture Laboratory	PC	3	0	0	3	1
U15BTP602	Bioprocess Engineering Laboratory	PC	3	0	0	3	1
U15GHP601	National Values	HS	1	1	0	0	1
Total Hours /Credits			29				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	PC	0	0	0	0	0
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

Grand Total Credits 183

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

Elective III							
U15BTE301	Nanobiotechnology ^C	PE	3	3	0	0	3
U15BTE302	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	0
U15BTOE02	Bioinformatics for Engineering	5	OE	3	3	0	0
U15BTOE03	Intellectual Property Rights	6	OE	3	3	0	0
U15BTOE04	Basic Physiology for Engineering	6	OE	3	3	0	0
U15BTOE05	Enzymes for Textile Processing	7	OE	3	3	0	0
U15GST003	Principles of Management*	PE	3	3	0	0	3

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

* 5th, 6th or 7th semesters