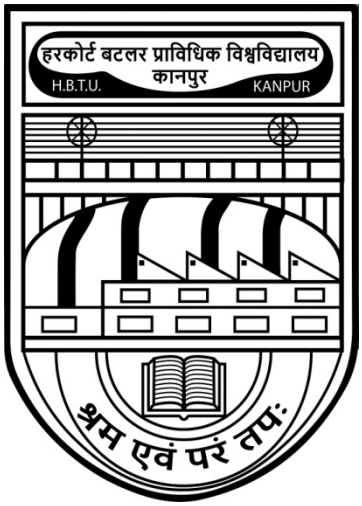
SEMESTER WISE COURSE STRUCTURE
&
EVALUATION SCHEME

MASTER OF TECHNOLOGY

OIL TECHNOLOGY

(Effective from the session 2017-18 for new entrants)



HARCOURT BUTLER TECHNICAL UNIVERSITY
KANPUR-208002 (UP) – INDIA

SEMESTER WISE COURSE STRUCTURE & EVALUATION SCHEME
M.TECH. OIL TECHNOLOGY
(FULL TIME PROGRAMME)

SEMESTER I

(A Stream only for Candidates having B.Tech. Chemical Tech. in Oil Technology)
(B Stream only for Candidates having B.Tech., in Branches other than Chemical Tech. in Oil Technology)
(C Stream only for Candidates having M.Sc. Chemistry / Applied Chemistry / Industrial Chemistry)

Group A

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	PCC	TCH 501	Advance Modeling and Simulation of Chemical Engineering Systems	4 (3-1-0)	30	20	-	50	50	100
2.	PCC	TCH 503	Advance Chemical Reaction Engineering	4 (3-1-0)	30	20	-	50	50	100
3.	PCC	TOT 501	Advance Oleo Chemicals	5 (3-1-2)	15	20	15	50	50	100
4.	PEC	PEC I	PEC-I	4 (3-1-0)	30	20	-	50	50	100
Total Credits				**17**						

Group B / C

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	PCC	TCH 501	Process Calculation	4 (3-1-0)	30	20	-	50	50	100
2.	PCC	TCH 503	Chemistry & Technology of Oil and Allied Products	4 (3-1-0)	30	20	-	50	50	100
3.	PCC	TOT 501	Quality Control Techniques in Oil and Allied Industries	5 (3-1-2)	15	20	15	50	50	100
4.	PEC	PEC I	PEC-I	4 (3-1-0)	30	20	-	50	50	100
Total Credits				**17**						

SEMESTER II

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	PCC	TOT 502	Modern Processing Technology of Oil-Bearing Materials	4 (3-1-0)	30	20	-	50	50	100
2.	PCC	TOT 504	Technology of Modified and Specialty fats & Oils	4 (3-1-0)	30	20	-	50	50	100
3.	PCC	TOT 506	Modern Processing Technology of Oils	5 (3-1-2)	15	20	15	50	50	100
4.	PEC	PEC II	PEC-II	4 (3-1-0)	30	20	-	50	50	100
Total Credits				**17**						

SEMESTER III

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	PCC	TBE 601	Industrial Enzymes	4 (3-1-0)	30	20	-	50	50	100
2.	PEC	PEC III	PEC-III	4 (3-1-0)	30	20	-	50	50	100
3.	Seminar	TOT 651	Seminar	4 (0-0-8)	-	50	-	50	50	100
4.	Dissertation	TOT 697	Dissertation	2 (0-0-4)	-	50	-	50	50	100
Total Credits				**14**						

SEMESTER IV

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	Dissertation	TOT 698	Dissertation	12(0-0-24)	-	50	-	50	50	100
Total Credits				**12**						

Total Programme Credits : 60

TOT 697 Dissertation will have Internal Evaluation while TOT 698 Dissertation will have External Evaluation.

DEPARTMENT OF OIL TECHNOLOGY
LIST OF ELECTIVE COURSES
M.TECH. OIL TECHNOLOGY
(FULL TIME PROGRAMME)

Programme Elective-I

S. No.	Course Code	Course Name	Credits
1.	TOT 507	Advance in Emulsion Technology	4(3-1-0)
2.	TOT 509	Interfacial Science and Engineering	4(3-1-0)
3.	TOT 511	Lipid Biotechnology	4(3-1-0)
4.	BMA 511	Engineering Mathematics	4(3-1-0)

Programme Elective-II

1.	TOT 508	Processing Plants and their Designs	4(3-1-0)
2.	TOT 510	Soaps and Synthetic Detergents	4(3-1-0)

Programme Elective-III

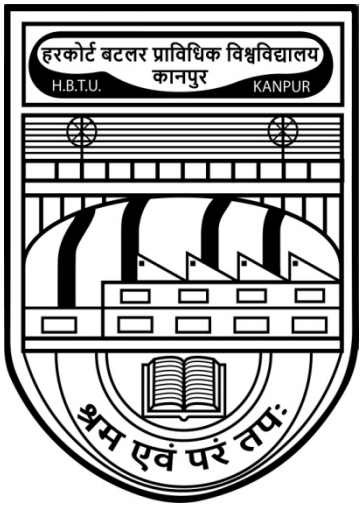
1.	TOT 603	Nutritional and Functional Foods	4(3-1-0)
2.	TOT 609	Perfumery and Cosmetics	4(3-1-0)

SEMESTER WISE COURSE STRUCTURE
&
EVALUATION SCHEME

MASTER OF TECHNOLOGY

BIOCHEMICAL ENGINEERING

(Effective from the session 2017-18 for new entrants)



HARCOURT BUTLER TECHNICAL UNIVERSITY
KANPUR-208002 (UP) – INDIA

SEMESTER WISE COURSE STRUCTURE & EVALUATION SCHEME
M.TECH. BIOCHEMICAL ENGINEERING
(FULL TIME PROGRAMME)

SEMESTER I

Group A

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	PCC	TCH 501	Advanced Mathematics and Statistical design of Experiments	4 (3-1-0)	30	20	-	50	50	100
2.	PCC	TBE 501	Bioreactor Design and Analysis	5 (3-1-2)	15	20	15	50	50	100
3.	PCC	TBE 503	Structural and Molecular Biology	4 (3-1-0)	30	20	-	50	50	100
4.	PEC	PEC I	PEC-I	4 (3-1-0)	30	20	-	50	50	100
Total Credits				**17**						

Group B /C

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	PCC	TBE 501	Bioreactor Design and Analysis	5 (3-1-2)	15	20	15	50	50	100
2.	PCC	TBE 503	Structural and Molecular Biology	4 (3-1-0)	30	20	-	50	50	100
3.	PCC	BMA 511	Engineering Mathematics	4 (3-1-0)	30	20	-	50	50	100
4.	PEC	PEC I	PEC-I	4 (3-1-0)	30	20	-	50	50	100
Total Credits				**17**						

SEMESTER II

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	PCC	TBE 502	Bioseparation and Downstream Processing	4 (3-1-0)	30	20	-	50	50	100
2.	PCC	TBE 504	Bioprocess Technology	4 (3-1-0)	30	20	-	50	50	100
3.	PCC	TBE 506	Environmental Biotechnology	5 (3-1-2)	15	20	15	50	50	100
4.	PEC	PEC II	PEC-II	4 (3-1-0)	30	20	-	50	50	100
Total Credits				**17**						

SEMESTER III

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	PCC	TBE 601	Industrial Enzymes	4 (3-1-0)	30	20	-	50	50	100
2.	PEC	PEC III	PEC-III	4 (3-1-0)	30	20	-	50	50	100
3.	Seminar	TBE 651	Seminar	2 (0-0-4)	-	50	-	50	50	100
4.	Dissertation	TBE 697	Dissertation	4 (0-0-8)	-	50	-	50	50	100
Total Credits				**14**						

SEMESTER IV

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	Dissertation	TBE 698	Dissertation	12 (0-0-24)	-	50	-	50	50	100
Total Credits				**12**						

Total Programme Credits : 60

TBE 697 Dissertation will have Internal Evaluation while TBE 698 Dissertation will have External Evaluation.

DEPARTMENT OF BIOCHEMICAL ENGINEERING
LIST OF ELECTIVE COURSES
M.TECH. BIOCHEMICAL ENGINEERING
(FULL TIME PROGRAMME)

Programme Elective-I

S. No.	Course Code	Course Name	Credits
1.	TBE 505	Bioinformatics	4 (3-1-0)
2.	TBE 507	Analytical Methods in Bioprocess	4 (3-1-0)
3.	TBE 509	Biochemical Engineering	4 (3-1-0)

Programme Elective-II

1.	TBE 508	Plant Biotechnology	4 (3-1-0)
2.	TBE 510	Animal Cell Culture and Tissue Engineering	4 (3-1-0)

Programme Elective-III

1.	TBE 603	Bioprocess Plant Design	4 (3-1-0)
2.	TBE 605	Bioenterprenureship and Regulatory Issues	4 (3-1-0)
3.	TBE 607	Bioenergy	4 (3-1-0)

SEMESTER WISE COURSE STRUCTURE
&
EVALUATION SCHEME

MASTER OF TECHNOLOGY

FOOD TECHNOLOGY

(Effective from the session 2017-18 for new entrants)

HARCOURT BUTLER TECHNICAL UNIVERSITY
KANPUR-208002 (UP) – INDIA

SEMESTER WISE COURSE STRUCTURE & EVALUATION SCHEME
M.TECH. FOOD TECHNOLOGY
(FULL TIME PROGRAMME)

SEMESTER I

Group A

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	PCC	TCH 501	Advance Modeling and Simulation of Chemical Engineering Systems	4 (3-1-0)	30	20	-	50	50	100
2.	PCC	TFT 501	Advances in Food Technology-I	5 (3-1-2)	15	20	15	50	50	100
3.	PCC	TFT 503	Engineering Properties of Foods	4 (3-1-0)	30	20	-	50	50	100
4.	PEC	PEC I	PEC-I	4 (3-1-0)	30	20	-	50	50	100
Total Credits				**17**						

Group B / C

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	PCC	TFT 501	Advances in Food Technology-I	5 (3-1-2)	15	20	15	50	50	100
2.	PCC	TFT 503	Engineering Properties of Foods	4 (3-1-0)	30	20	-	50	50	100
3.	PCC	TFT 505	Microbiology and Chemistry of Foods	4 (3-1-0)	30	20	-	50	50	100
4.	PEC	PEC I	PEC-I	4 (3-1-0)	30	20	-	50	50	100
Total Credits				**17**						

SEMESTER II

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	PCC	TFT 502	Advances in Food Technology-II	5 (3-1-2)	30	20	-	50	50	100
2.	PCC	TFT 504	Food Process Engineering	4 (3-1-0)	30	20	-	50	50	100
3.	PCC	TFT 506	Food Safety & Quality Assurance	4 (3-1-0)	15	20	15	50	50	100
4.	PEC	PEC II	PEC-II	4 (3-1-0)	30	20	-	50	50	100
Total Credits				**17**						

SEMESTER III

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	PCC	TFT 601	Frozen Food & Cold Chain Management	4 (3-1-0)	30	20	-	50	50	100
2.	PEC	PEC III	PEC-III	4 (3-1-0)	30	20	-	50	50	100
3.	Seminar	TFT 651	Seminar	2 (0-0-4)	-	50	-	50	50	100
4.	Dissertation	TFT 697	Dissertation	4 (0-0-8)	-	50	-	50	50	100
Total Credits				**14**						

SEMESTER IV

Sr. No.	Course Type	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESM	Total Mark
					MSE	TA	Lab	Total		
1.	Dissertation	TFT 698	Dissertation	12 (0-0-24)	-	50	-	50	50	100
Total Credits				**12**						

Total Programme Credits : 60

TFT 697 Dissertation will have Internal Evaluation while TFT 698 Dissertation will have External Evaluation.

DEPARTMENT OF FOOD TECHNOLOGY
LIST OF ELECTIVE COURSES
M.TECH. FOOD TECHNOLOGY
(FULL TIME PROGRAMME)

Programme Elective-I

S. No.	Course Code	Course Name	Credits
1.	TFT 507	Post-harvest/Pre processing Quantified Operations	4(3-1-0)
2.	TFT 509	Food Industry Waste Management	4(3-1-0)
3.	TFT 511	Processing & Preservation of Foods	4(3-1-0)
4.	BMA 511	Engineering Mathematics	4(3-1-0)

Programme Elective-II

1.	TFT 508	Nutraceutical & Functional Foods	4(3-1-0)
2.	TFT 510	Applications of Biotechnological Tools in Food Analysis	4(3-1-0)
3.	TFT 512	Advances in Food Packaging Technologies	4(3-1-0)

Programme Elective-III

1.	TFT 603	Novel Techniques in Food Processing & Preservation	4(3-1-0)
2.	TFT 605	Computer Applications in Food Processing	4(3-1-0)
3.	TFT 607	Rheological Properties and Microstructure of Foods	4(3-1-0)