

MVJ College of Engineering, Whitefield, Bangalore 560067

An Autonomous Institution, Affiliated to VTU, Belagavi

Scheme of Teaching and Examination

Outcome Based Education (OBE) and Choice Based Credit System (CBCS)

Effective from the academic year 2021-22

Department of Chemical Engineering

Semester III

S.No.	Course		Course Title	BoS	Teaching hrs./week				Examination				Credits
	Type	Code			Lecture L	Tutorial T	Practical P	Self-Study S	Duration Hrs.	CIE Marks	SEE Marks	Total Marks	
1	BSC	MVJ21MA31C	Fourier Series, Transforms, Numerical & Optimization Techniques	Mathematics	3	2	-	-	3	50	50	100	4
2	PCC	MVJ21CH32	Chemical Process Calculations	Chemical Engineering	3	2	-	-	3	50	50	100	4
3	PCC	MVJ21CH33	Material Science for Chemical Engineers	Chemical Engineering	3	-	-	-	3	50	50	100	3
4	IPCC	MVJ21CH34	Mechanical Operations	Chemical Engineering	2	2	2	-	3	100	100	200	4
5	IPCC	MVJ21CH35	Momentum Transfer	Chemical Engineering	2	2	2	Y	3	100	100	200	4
6	HSMC	MVJ21KAN36	Samskruthika/ Balake Kannada	Humanities	1	-	-	-	2	50	50	100	1
7	AEC	MVJ21CHA37	AEC3: Soft Skills for Engineers	Chemical Engineering	1	-	2	-	2	50	50	100	2
8	BSC	MVJ21MATDIP-I	Additional Mathematics - I	Mathematics	1	2			3	50	50	100	-
Total					15/16	8/10	6	-	19/22	450/500	450/500	900/1000	22

Summer Internship I Viva Voce will be conducted for the 03 weeks inter/intra institutional summer internship activities carried out during the intervening period of II and III semester. The internship will be considered as a head of passing and will be considered for the award of the degree. Those who do not take up / complete the internship will be declared fail and will have to complete during the subsequent examination after satisfying the internship requirements.

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1	BSC	MVJ21MA41C	Complex Analysis, Probability and Statistical Methods	Mathematics	2	2	-	-	3	50	50	100	3
2	PCC	MVJ21CH42	Chemical Engineering Thermodynamics	Chemical Engineering	2	2	-	-	3	50	50	100	3
3	PCC	MVJ21CH43	Chemical Process Industries	Chemical Engineering	3	-	-	-	3	50	50	100	3
4	IPCC	MVJ21CH44	Process Heat Transfer	Chemical Engineering	2	2	2	-	3	100	100	200	4
5	IPCC	MVJ21CH45	Chemical Reaction Engineering	Chemical Engineering	2	2	2	Y	3	100	100	200	4
6	HSMC	MVJ21CPH46	Constitution of India and Professional Ethics and Cyber law	Humanities	1	-	-	-	2	50	50	100	1
7	AEC	MVJ21CHA47	AEC4: Software Tools for Chemical Engineers	Chemical Engineering	1	-	2	-	2	50	50	100	2
8	INT	MVJ21INT48	Summer Internship I	-	-	-	-	-	-	-	-	-	2
9	BSC	MVJ21MATDIP-II	Additional Mathematics - II	Mathematics	1	2	-	-	3	50	50	100	-
Total					13/14	8/10	6	-	19/22	450/500	450/500	900/1000	22

Summer Internship II Viva Voce will be conducted for the 04 weeks industrial/ Govt./NGO/MSME/rural internship/Innovation/ Entrepreneurship summer internship activities carried out during the intervening period of IV and V semester. The internship will be considered as a head of passing and will be considered for the award of the degree. Those who do not take up / complete the internship will be declared fail and will have to complete during the subsequent examination after satisfying the internship requirements.

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	Type	Code			Lecture L	Tutorial T	Practical P	Self-Study S	Duration Hrs.	CIE Marks	SEE Marks	Total Marks	
1	HSMC	MVJ21CH51	Technical Management & Entrepreneurship	Chemical Engineering	3	-	-	-	3	50	50	100	3
2	PCC	MVJ21CH52	Mass Transfer - I	Chemical Engineering	2	2	-	-	3	50	50	100	3
3	IPCC	MVJ21CH53	Instrumental Methods of Analysis	Chemical Engineering	3	-	2	-	3	100	100	200	4
4	IPCC	MVJ21CH54	Process Control & IIOT	Chemical Engineering	2	2	2	Y	3	100	100	200	4
5	PEC	MVJ21CH55X	Professional Elective -I	Chemical Engineering	3	-	-	-	3	50	50	100	3
6	HSMC	MVJ21CH56	Environmental Studies	Civil Engineering	1	-	-	-	2	50	50	100	1
7	AEC	MVJ21CHA57	AEC5: Research Methodology & IPR	Chemical Engineering	1	2	-	-	2	50	50	100	2
8	UHV	MVJ21UHV58	Universal Human Values	Chemical Engineering	2	-	-	-	3	50	50	100	2
Total					17	6	4	-	22	500	500	1000	22

Course Code	Professional Elective-I
MVJ21CH551	Chemical Process Instrumentation
MVJ21CH552	Computational Fluid Dynamics
MVJ21CH553	Petroleum Refining & Petrochemicals
MVJ21CH554	Heterogeneous Reaction Systems

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	Type	Code			Lecture L	Tutorial T	Practical P	Self-Study S	Duration Hrs.	CIE Marks	SEE Marks	Total Marks	
1	HSMC	MVJ21CH61	Transport Phenomena	Chemical Engineering	2	2	-	-	3	50	50	100	3
2	IPCC	MVJ21CH62	Chemical Process Equipment Design & Drawing	Chemical Engineering	2	2	2	-	3	100	100	200	4
3	IPCC	MVJ21CH63	Mass Transfer- II	Chemical Engineering	2	2	2	Y	3	100	100	200	4
4	OEC	MVJ21CH64X	Open Elective - I	Chemical Engineering	3	-	-	-	3	50	50	100	3
5	OEC	MVJ21CH65	Open Elective - II (MOOCs)	NPTEL	3	-	-	-	3	50	50	100	3
6	AEC	MVJ21CHA66	AEC6: Data Analytics for Chemical Engineers	Chemical Engineering	1	-	-	-	2	50	50	100	1
7	PRJ	MVJ21CHMP67	Mini project	-	-	-	4	-	3	50	50	100	2
8	INT	MVJ21INT68	Summer Internship II	-	-	-	-	-	3	50	50	100	2
Total					13	6	8	-	23	500	500	1000	22

Research /Industrial Internship- shall be carried out during VI and VII-semester for 24 weeks duration. The **Research /Industrial Internship** shall be on Industrial/Govt./NGO/MSME/Rural Internship/Innovation/Entrepreneurship. **Research Internship** must be taken up at Centers of Excellence (CoE)/ Study Centers established in the institute/ at the reputed research organizations. The viva-voce examinations for **Research /Industrial Internship** shall be carried out during VIII semester.

Course Code	Open Elective-I
MVJ21CH641	Industrial Pollution and Control
MVJ21CH642	Nanoscience & Nanotechnology
MVJ21CH643	Renewable Energy: Resources and Technologies
MVJ21CH644	Food Technology

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Semester VII

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	Type	Code			Lecture L	Tutorial T	Practical P	Self-Study S	Duration Hrs.	CIE Marks	SEE Marks	Total Marks	
1	IPCC	MVJ21CH71	Chemical Process Modelling & Simulation	Chemical Engineering	2	2	2	-	3	100	100	200	4
2	PEC	MVJ21CH72X	Professional Elective - II	Chemical Engineering	3	-	-	-	3	50	50	100	3
3	PEC	MVJ21CH73X	Professional Elective - III	Chemical Engineering	3	-	-	-	3	50	50	100	3
4	OEC	MVJ21CH74X	Open Elective - III	Chemical Engineering	3	-	-	-	3	50	50	100	3
5	PRJ	MVJ21CHP76	Project Phase - I	-	-	-	4	-	3	50	50	100	2
6	AEC	MVJ21CHA77	AEC: Food Processing (online minimum of 4 weeks duration)	Chemical Engineering	1	-	-	-	2	50	50	100	1
Total					12	2	6	-	17	350	350	700	16

Course Code	Professional Elective-II	Course Code	Professional Elective-III	Course Code	Open Elective-II
MVJ21CH721	Solid Waste Management	MVJ21CH731	Chemical Process Integration	MVJ21CH741	Energy Technology
MVJ21CH722	Pharmaceutical Technology	MVJ21CH732	Process Intensification	MVJ21CH742	ISO & Quality Management System
MVJ21CH723	Biochemical Engineering	MVJ21CH733	Biosensors & Bioelectronics	MVJ21CH743	Material Science and Technology
MVJ21CH724	Industrial Pollution & Control	MVJ21CH734	Process & Industrial Safety	MVJ21CH744	Process & Industrial Safety

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Semester VIII

Sl.No.	Course		Course Title	BoS	Teaching hrs./week				Examination			Credits	
	Type	Code			Lecture L	Tutorial T	Practical P	Self- Study S	Duration Hrs.	CIE Marks	SEE Marks		Total Marks
1	PRJ	MVJ21CHP81	Project Phase II	-	-	-	-	-	3	50	50	100	10
2	INT	MVJ21CHINT82	Research / Industrial Internship	-	-	-	-	-	3	50	50	100	05
3	Seminar	MVJ21CHS83	Seminar	-	-	-	-	-	3	50	50	100	01
Total					-	-	-	-	9	150	150	300	16