

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 Aerospace Engineering

Semester III

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	BSC	MVJ21MAS31X/ MAE31/MME31	Transforms and Statistical Methods	Math	3	2	-	-	3	50	50	100	4
2	PCC	MVJ21AS32/ MVJ21AE32	Thermodynamics	AS	3	2	-	-	3	50	50	100	4
3	PCC	MVJ21AS33	Elements of Aerospace Technologies	AS	3	-	-	-	3	50	50	100	3
4	IPCC	MVJ21AS34/ MVJ21AE34	Mechanics of Materials(+Material Testing Lab)	AS	3	-	2	-	3	100	100	200	4
5	IPCC	MVJ21AS35/ MVJ21AE35	Mechanics of Fluids (+Fluid Mechanics Lab)	AS	3	-	2	-	3	100	100	200	4
6	HSMC	MVJ21XX36	Kannada/ Constitution of India and Professional Ethics and Cyber law		1				2	50	50	100	1
7	AEC	MVJ21AS37/ MVJ21AE37	Aerospace Materials	AS	1		-		2	50	50	100	2
8	BSC	MVJ21MATDIP-I	Diploma Mathematics-I	Math	1	2			3	50	50	100	-
Total						17/17	4/6	4		450/500	450/500	1000	22

Kannada will be taught by the following departments- AE,AS,CH,CS,CV,AI&ML

Constitution of India and Professional Ethics will be taught by the following departments-CG,DS,EE,EE,IS,ME

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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Semester IV

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	BSC	MVJ21MAS41X/ MAE41/MME41	Complex Variables and Numerical Methods	Math	2	2	-	-	3	50	50	100	3
2	PCC	MVJ21AS42/ MVJ21AE42	Incompressible Aerodynamics	AS	3	-	-	-	3	50	50	100	3
3	PCC	MVJ21AS43/ MVJ21AE43	Finite Element Methods	AS	2	2	-	-	3	50	50	100	3
4	IPCC	MVJ21AS44/ MVJ21AE44	Mechanism and Machine Theory (+Machine Shop and MMM Lab)	AS	3	-	2	-	3	100	100	200	4
5	IPCC	MVJ21AS45	Fundamentals of Aerospace Structures(+CAAD Lab)	AS	3	-	2	-	3	100	100	200	4
6	HSMC	MVJ21XX46	Kannada/ Constitution of India and Professional Ethics and Cyber law		1	-	-	-	2	50	50	100	1
7	AEC	MVJ21AS47/ MVJ21AE47	Turbomachines	AS	1	-	-	-	2	50	50	100	2
8	INT	MVJ21INT48	Summer Internship I	AS	-	-	-	-					2
9	BSC	MVJ21MATDIP-II	Diploma Mathematics II	Math	1	2	-	-	3	50	50	100	-
Total						16/17	4/4	4		450/500	450/500	1000	22

Kannada will be taught by the following departments-CG, DS, EE, EE, IS, ME

Constitution of India and Professional Ethics will be taught by the following departments-AE, AS, CH, CS, CV, AI&ML

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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Semester V

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	HSMC	MVJ21AS51/ MVJ21AE51	Aviation Management	AS	3	-	-	-	3	50	50	100	3
2	PCC	MVJ21AS52	Computational Fluid Dynamics	AS	3	-	-	-	3	50	50	100	3
3	IPCC	MVJ21AS53/ MVJ21AE53	Compressible Aerodynamics (+Aerodynamic Lab)	AS	3	-	2	-	3	100	100	200	4
4	IPCC	MVJ21AS54	Aerospace Propulsion (+Aerospace Propulsion Lab)	AS	3	-	2	Y	3	100	100	200	4
5	PEC	MVJ21XX55X	PEC 1	AS	3	-	-	-	3	50	50	100	3
6	HSMC	MVJ21XX56	Environmental Studies	CV	1	-	-	-	2	50	50	100	1
7	AEC	MVJ21XX57	Research Methodology & IPR/Life Science AEC5	AS	1	2	-		2	50	50	100	2
8	UHV	MVJ21UHVI58	Universal Human Values	AS	2	-			3	50	50	100	2
Total					19	2	4			500	500	1000	22

Course Code	Professional Elective-I
MVJ21AS551	Heat and Mass Transfer in Aerospace Applications
MVJ21AS552/ MVJ21AE552	Theory of Vibration
MVJ21AS553	Rockets and Missiles
MVJ21AS554/ MVJ21AE554	Optimisation Techniques and Probability Theory
MVJ21AS555	Astrophysics and Space Environment

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Semester VI

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	HSMC	MVJ21AS61	Aerospace Systems and Avionics	AS	2	2	-	-	3	50	50	100	3
2	IPCC	MVJ21AS62	Aerospace Structural Analysis (+Aerospace Structures Lab)	AS	3	-	2	-	3	100	100	200	4
3	IPCC	MVJ21AS63	Aerospace Vehicle Design (+Design Modelling and Analysis Lab)	AS	3	-	2	-	3	100	100	200	4
4	OEC	MVJ21AS64X	OEC I	AS	3	-	-	-	3	50	50	100	3
5	OEC	MVJ21AS65	MOOC Courser (OEC 2)	AS	3	-	-	-	3	50	50	100	3
6	AEC	MVJ21AS66	Introduction to Spacecraft & Satellite Technologies	AS	2	-	-	-	2	50	50	100	1
7	PRJ	MVJ21XXPRJ67	Mini project	AS	-	-	4	-	3	50	50	100	2
8	INT	MVJ21INT68I	Summer Internship II	AS	-	-	-	-	3	50	50	100	2
Total					16	2	8			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.

Under open elective, departments shall offer only one course. Student will have option to select one course from any of the departments.

Course Code	Open Elective-I
MVJ21AS641	Introduction to Aerospace History
MVJ21AS642	Introduction to Missiles and Launch Vehicles
MVJ21XX643	Introduction to Spacecraft & Satellite Technologies

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Semester VII

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	IPCC	MVJ21AS71	Space Flight Mechanics(+ Space Simulation Lab)		3	-	2	-	3	100	100	200	4
2	PEC	MVJ21AS72X	Professional Elective-II		3	-	-	-	3	50	50	100	3
3	PEC	MVJ21AS73X	Professional Elective-III		3	-	-	-	3	50	50	100	3
4	OEC	MVJ21AS74X	OEC 3		3	-	-	-	3	50	50	100	3
5	PRJ	MVJ21ASPR76	Project Phase I		-	-	4		3	50	50	100	2
6	AEC	MVJ21AS77	AEC (online minimum of 4 weeks duration)		1	-	-	-	2	50	50	100	1
Total					13	-	6			350	350	700	16

Course Code	Professional Elective-II	Course Code	Professional Elective-III
MVJ21AS721	Hypersonic Flows	MVJ21AS731	Atmospheric Flight Mechanics
MVJ21AS722/ MVJ21AE722	Composite Structures	MVJ21AS732/ MVJ21AE732	Reusable Launch Vehicles
MVJ21AS723	Cryogenics	MVJ21AS733/ MVJ21AE733	Artificial Intelligence and Robotics
MVJ21AS724	Spacecraft Launch Vehicles	MVJ21AS734	Satellite Design and Systems
MVJ21AS725/ MVJ21AE725	Control Engineering	MVJ21AS735/ MVJ21AE735	Guidance Navigation and Control

Course Code	Open Elective-III
MVJ21AS741	Spacecraft Navigation and Control
MVJ21AS742	Spacecraft Launch Vehicles
MVJ21AS743/ MVJ21AE743	Rockets & Missiles
MVJ21AS744	Aerospace Systems and Instrumentation
MVJ21AS745	Avionics

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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	MVJ21XXP81	Project Phase II	AE	-	-	-	-	3	50	50	100	10
2	INT	MVJ21XXINT82	Research / Industrial Internship	AE	-	-	-	-	3	50	50	100	05
3	Seminar	MVJ21XXS83	Seminar	AE	-	-	-	-	3	50	50	100	01
Total					-	-		-		150	150	300	16

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Scheme of study - 2021 Scheme- Semester VIII

Distribution of Credits

Course Type/Semester	Semester I	Semester II	Semester III	Semester IV	Semester V	Semester VI	Semester VII	Semester VIII	Total
HSMC	2	2	1	1	3+1	3	-	-	13
BSC	7	7	4	3	-	-	-	-	21
ESC	10	10	-	-	-	-	-	-	20
PCC	-	-	7	6	3	-	-	-	16
IPCC	-	-	8	8	8	8	4	-	36
PEC	-	-	-	-	-3	-	6	-	9
OEC	-	-	-	-	-	6	3	-	9
INT	-	-	-	2	-	2	-	5	9
Project	-	-	-	-	-	2	2	10	14
AEC	1	1	2	2	2	1	1	-	10
UHV	-	-	-	-	2	-	-	-	2
Seminar	-	-	-	-	-	-	-	1	1
Total	20	20	22	22	22	22	16	16	160