AMRITA VISHWA VIDYAPEETHAM

B TECH PROGRAMME

Revised Curriculum (effective for 2017 and 2018 Admission students)

B TECH – MECHANICAL ENGINEERING

SEMESTER I							**SEMESTER II**					
Cat	Code	Title	L T P	Cr	ES		Cat	Code	Title	L T P	Cr	ES
HUM	15ENG111	Communicative English	2 0 2	3	**A**		SCI	15MAT121	Vector Calculus and Ordinary Differential Equations	3 1 0	4	**B**
SCI	15MAT111	Calculus and Matrix Algebra	2 1 0	3	**B**		SCI	15CHY100/ 15PHY100	Chemistry/ Physics	3 0 0	3	**C**
ENGG	15CSE100	Computational Thinking and Problem Solving	3 0 2	4	**D**		ENGG	15CSE102	Computer Programming	3 0 0	3	**D**
SCI	15PHY100/ 15CHY100	Physics / Chemistry	3 0 0	3	**C**		ENGG	15MEC101	Engineering Drawing - CAD II	2 0 2	3	**A**
SCI	15PHY181/ 15CHY181	Physics Lab. / Chemistry Lab.	0 0 2	1	**L1**		ENGG	15MEC102	Engineering Mechanics	3 0 0	3	**E**
ENGG	15MEC180/ 15EEE180	Workshop A/ Workshop B	0 0 2	1	**L2**		SCI	15CHY181/15PHY181	Chemistry Lab. / Physics Lab.	0 0 2	1	**L1**
ENGG	15MEC100	Engineering Drawing- CAD	2 0 2	3	**E**		ENGG	15EEE180/ 15MEC180	Workshop B/ Workshop A	0 0 2	1	**L2**
HUM	15CUL101	Cultural Education I	2 0 0	2	**F**		ENGG	15CSE180	Computer Programming Lab.	0 0 2	1	**L3**
		Total (H = 5; S = 7; E = 8)		**20**			HUM	15CUL111	Cultural Education II	2 0 0	2	**F**
									Total (H = 2; S = 8; E = 11)		**21**	
SEMESTER III							**SEMESTER IV**					
ENGG	15MEC201	Engineering Thermodynamics	3 0 0	3	A		ENGG	15MEC211	Fluid Mechanics and Machinery	4 0 0	4	A
ENGG	15MEC202	Machine Drawing	2 0 2	3	C		ENGG	15MEC212	Kinematics of Machines	3 0 2	4	C
ENGG	15MEC203	Materials Science and Metallurgy	3 0 0	3	D		ENGG	15MEC213	Manufacturing Process I	3 0 0	3	D
ENGG	15MEC204	Mechanics of Solids	3 0 0	3	E		SCI	15MAT214	Probability and Statistics	2 1 0	3	**B**
ENGG	15EEE205	Electrical and Electronics Engineering	3 0 2	4	G		ENGG		Elective I*	3 0 0	3	**E**
SCI	15MAT204	Transforms and Partial Differential Equations	2 1 0	3	**B**		HUM		Humanities Elective II	2 0 0	2	**H**
HUM		Humanities Elective I	2 0 0	2	**H**		ENGG	15MEC285	Fluid Mechanics and Machines Lab.	0 0 2	1	L1
ENGG	15MEC281	Materials Testing and Metallurgy Lab.	0 0 2	1	L1		HUM	15SSK211	Soft Skills I	1 0 2	2	**G**
HUM	15AVP201	Amrita Values Program I	1 0 0	1	**F**		HUM	15AVP211	Amrita Values Program II	1 0 0	1	**F**
		Total (H = 3; S = 3; E = 17)		**23**					**Total (H = 5; S = 3; E = 15)**		**23**	
SEMESTER V							**SEMESTER VI**					
ENGG	15MEC301	Design of Machine Elements I	3 0 0	3	A		ENGG	15MEC311	Design of Machine Elements II	3 1 0	4	A
ENGG	15MEC302	Dynamics of Machines	3 0 0	3	C		ENGG	15MEC312	Heat Transfer	3 1 0	4	B
ENGG	15MEC303	Heat Power Engineering	3 0 0	3	D		ENGG	15MEC313	Introduction to Finite Element Methods	3 0 2	4	C
ENGG	15MEC304	Manufacturing Process II	3 0 0	3	F		ENGG	15MEC314	Metrology and Measurements	3 0 0	3	D
SCI	15MAT302	Numerical Methods	2 0 2	3	**B**		ENGG		Elective III*	3 0 0	3	**E**
ENGG		Elective II*	3 0 0	3	**E**		ENGG	15MEC385	Heat Transfer and Thermal Analysis Lab.	0 0 2	1	L1
ENGG	15MEC381	Manufacturing Process Lab.	0 0 2	1	L1		ENGG	15MEC386	Metrology and Measurements Lab.	0 0 2	1	L2
ENGG	15MEC382	Thermal Science Lab.	0 0 2	1	L2		HUM	15SSK311	Soft Skills III	1 0 2	2	**G**
HUM	15SSK301	Soft Skills II	1 0 2	2	**G**				**Total (H = 2; E= 20)**		**22**	
ENGG	15LIL390	**[Live-in –Lab]****		**[3]**	P2							
		Total (H = 2; S = 3: E = 17 [+3])		**22 [+3]**								

SEMESTER VII							**SEMESTER VIII**					
ENGG		Elective IV*	3 0 0	3	A		ENGG	15MEC411	Operations Research	3 0 0	3	A
ENGG	15MEC402	Control Engineering	3 0 0	3	B		ENGG		Elective VI*	3 0 0	3	**E**
ENGG	15MEC403	Industrial Robotics	3 0 0	3	C		PRJ	15MEC499	Project Phase II		10	P
ENGG	15MEC404	Mechanical Vibrations	3 0 0	3	F				**Total (E = 6; P = 10)**		**16**	
HUM	15ENV300	Environmental Science and Sustainability	3 0 0	3	**D**							
ENGG		Elective V*	3 0 0	3	**E**							
ENGG	15MEC481	Computer Integrated Manufacturing Lab.	0 0 2	1	L1							
ENGG	15MEC482	Machine Dynamics and Control Lab.	0 0 2	1	L2							
PRJ	15MEC495	Project Phase I		2	P1							
ENGG	15LIL490	**[Live-in –Lab]****		**[3]**	P2							
		Total (H = 3; E = 17 [+3]; P = 2)		**22 [+3]**								
									TOTAL	**169**		
HUM		Humanities		22								
SCI		Basic Sciences		24								
ENGG		Engineering Sciences		111								
PRJ		Project Work		12								
		Total		**169**								
			ELECTIVES									
		DESIGN STREAM							**THERMAL STREAM**			
	15MEC230	Aircraft Systems and Engineering	3 0 0	3	**D/E**			15MEC246	Automotive Electronics	3 0 0	3	**D/E**
	15MEC231	Automotive Chassis Design	3 0 0	3	**D/E**			15MEC247	Combustion Engineering	3 0 0	3	**D/E**
	15MEC232	Automotive Technology	3 0 0	3	**D/E**			15MEC248	Computational Fluid Dynamics	3 0 0	3	**D/E**
	15MEC233	Condition Monitoring and Diagnostic Maintenance	3 0 0	3	**D/E**			15MEC249	Design of Thermal Systems	3 0 0	3	**D/E**
	15MEC234	Design for Manufacture and Assembly	3 0 0	3	**D/E**			15MEC250	Fluid Power Drives and Controls	3 0 0	3	**D/E**
	15MEC235	Fracture Mechanics	3 0 0	3	**D/E**			15MEC251	Fundamentals of Nuclear Engineering	3 0 0	3	**D/E**
	15MEC236	Materials Selection in Mechanical Design	3 0 0	3	**D/E**			15MEC252	Gas Dynamics and Jet Propulsion	3 0 0	3	**D/E**
	15MEC237	Mechatronics	3 0 0	3	**D/E**			15MEC253	Internal Combustion Engines and Pollution Control	3 0 0	3	**D/E**
	15MEC238	Micro-Electro Mechanical Systems	3 0 0	3	**D/E**			15MEC254	Petroleum Refinery Engineering	3 0 0	3	**D/E**
	15MEC239	Modelling and Simulation of Engineering Systems	3 0 0	3	**D/E**			15MEC255	Power Plant Engineering	3 0 0	3	**D/E**
	15MEC240	Optimization Techniques in Engineering	3 0 0	3	**D/E**			15MEC256	Refrigeration and Air Conditioning	3 0 0	3	**D/E**
	15MEC241	Pressure Vessel Design	3 0 0	3	**D/E**			15MEC257	Renewable Sources of Energy	3 0 0	3	**D/E**
	15MEC242	Theory of Elasticity	3 0 0	3	**D/E**			15MEC258	TurboMachinery	3 0 0	3	**D/E**
	15MEC243	Tool Design	3 0 0	3	**D/E**			15MEC259	Advanced Fluid Mechanics	3 0 0	3	D/E
									MANAGEMENT			
		MANUFACTURING STREAM						15MEC331	Engineering Economic Analysis	3 0 0	3	**D/E**
	15MEC261	Advanced Casting Technology	3 0 0	3	**D/E**			15MEC332	Enterprise Management	3 0 0	3	**D/E**
	15MEC262	Advanced Manufacturing Processes	3 0 0	3	**D/E**			15MEC333	Financial Management	3 0 0	3	**D/E**
	15MEC263	Advanced Materials and Processes	3 0 0	3	**D/E**			15MEC334	Industrial Engineering	3 0 0	3	**D/E**
	15MEC264	Advanced Metrology and Sensing Systems	3 0 0	3	**D/E**			15MEC335	Lean Manufacturing	3 0 0	3	**D/E**
	15MEC265	Advanced Welding Technology	3 0 0	3	**D/E**			15MEC336	Managerial Statistics	3 0 0	3	**D/E**
	15MEC266	CNC Machines	3 0 0	3	**D/E**			15MEC337	Marketing Management	3 0 0	3	**D/E**
	15MEC267	Composite Materials and Processing	3 0 0	3	**D/E**			15MEC338	Operations Management	3 0 0	3	**D/E**
	15MEC268	Metal Forming Technology	3 0 0	3	**D/E**			15MEC339	Project Management	3 0 0	3	**D/E**
	15MEC269	Micro Manufacturing	3 0 0	3	**D/E**			15MEC340	Supply Chain Management	3 0 0	3	**D/E**
	15MEC270	Modern Practices in Product Design and Manufacture	3 0 0	3	**D/E**			15MEC341	Total Quality Management	3 0 0	3	**D/E**
	15MEC271	Non-Destructive Testing	3 0 0	3	**D/E**							
	15MEC272	Product Cost Estimation	3 0 0	3	**D/E**							
	15MEC273	Quality Control and Reliability Engineering	3 0 0	3	**D/E**							
	15MEC274	Simulation, Modelling of Manufacturing Systems	3 0 0	3	**D/E**							

* A maximum of One Elective course can be chosen from the Electives prescribed for other Branches or from under Science Electives.

**** Live-in-Lab** -This initiative is to provide opportunities for students to get involved in coming up with technology solutions for societal problems. The students shall visit villages or rural sites during the vacations (after 4th semester or sixth semester) and if they identify a worthwhile project, they shall register for a 3-credit Live-in-Lab project, in the fifth or seventh semester. The objectives and projected outcome of the project should be reviewed and approved by the Dept. chairperson and a faculty assigned as the project guide. On completion of the project, the student shall submit a detailed project report. The report shall be evaluated and the students shall appear for a viva-voce test on the project.
Students undertaking and registering for a Live-in-Lab project, can be exempted from registering for an Elective course in the higher semester.

SCIENCE ELECTIVES

SCI	15CHY230	Advanced Polymer Chemistry	3 0 0	3	**D/G/H**		SCI	15PHY230	Advanced Classical Dynamics	3 0 0	3	**D/G/H**
SCI	15CHY231	Batteries and Fuel Cells	3 0 0	3	**D/G/H**		SCI	15PHY231	Astronomy	3 0 0	3	**D/G/H**
SCI	15CHY232	Biomaterial Sciences	3 0 0	3	**D/G/H**		SCI	15PHY232	Astrophysics	3 0 0	3	**D/G/H**
SCI	15CHY233	Catalytic Chemistry	3 0 0	3	**D/G/H**		SCI	15PHY233	Biophysics and Biomaterials	3 0 0	3	**D/G/H**
SCI	15CHY234	Chemistry of Advanced Materials	3 0 0	3	**D/G/H**		SCI	15PHY234	Computational Physics	3 0 0	3	**D/G/H**
SCI	15CHY235	Chemistry of Engineering Materials	3 0 0	3	**D/G/H**		SCI	15PHY235	Concepts of Nanophysics and Nanotechnology	3 0 0	3	**D/G/H**
SCI	15CHY236	Chemistry of Nanomaterials	3 0 0	3	**D/G/H**		SCI	15PHY236	Earth's Atmosphere	3 0 0	3	**D/G/H**
SCI	15CHY237	Chemistry of Toxicology	3 0 0	3	**D/G/H**		SCI	15PHY237	Earth's Structure and Evolution	3 0 0	3	**D/G/H**
SCI	15CHY238	Colloidal and Interfacial Chemistry	3 0 0	3	**D/G/H**		SCI	15PHY238	Electrical Engineering Materials	3 0 0	3	**D/G/H**
SCI	15CHY239	Computational Chemistry and Molecular Modelling	3 0 0	3	**D/G/H**		SCI	15PHY239	Electromagnetic Fields and Waves	3 0 0	3	**D/G/H**
SCI	15CHY240	Corrosion Science	3 0 0	3	**D/G/H**		SCI	15PHY240	Electronic Material Sciences	3 0 0	3	**D/G/H**
SCI	15CHY241	Electrochemical Energy Systems and Processes	3 0 0	3	**D/G/H**		SCI	15PHY241	Lasers in Material Processing	3 0 0	3	**D/G/H**
SCI	15CHY242	Environmental Chemistry	3 0 0	3	**D/G/H**		SCI	15PHY242	Medical Physics	3 0 0	3	**D/G/H**
SCI	15CHY243	Fuels and Combustion	3 0 0	3	**D/G/H**		SCI	15PHY243	Microelectronic Fabrication	3 0 0	3	**D/G/H**
SCI	15CHY244	Green Chemistry and Technology	3 0 0	3			SCI	15PHY244	Nonlinear Dynamics	3 0 0	3	**D/G/H**
SCI	15CHY245	Instrumental Methods of Analysis	3 0 0	3	**D/G/H**		SCI	15PHY245	Nuclear Energy – Principles and Applications	3 0 0	3	**D/G/H**
SCI	15CHY246	Medicinal Organic Chemistry	3 0 0	3	**D/G/H**		SCI	15PHY246	Optoelectronic Devices	3 0 0	3	**D/G/H**
SCI	15CHY247	Modern Polymer Composites	3 0 0	3	**D/G/H**		SCI	15PHY247	Photovoltaics	3 0 0	3	**D/G/H**
SCI	15CHY248	Organic Reaction Mechanisms	3 0 0	3	**D/G/H**		SCI	15PHY248	Physics of Lasers and Applications	3 0 0	3	**D/G/H**
SCI	15CHY249	Organic Synthesis and Stereochemistry	3 0 0	3	**D/G/H**		SCI	15PHY249	Physics of Semiconductor Devices	3 0 0	3	**D/G/H**
SCI	15CHY250	Polymer Materials and Properties	3 0 0	3	**D/G/H**		SCI	15PHY250	Quantum Physics and Applications	3 0 0	3	**D/G/H**
SCI	15CHY251	Polymers for Electronics	3 0 0	3	**D/G/H**		SCI	15PHY251	Thin Film Physics	3 0 0	3	**D/G/H**
SCI	15CHY252	Solid State Chemistry	3 0 0	3	**D/G/H**							

HUMANITIES ELECTIVES

HUM	15CUL230	Achieving Excellence in Life - An Indian Perspective	2 0 0	2	**H**		HUM	15HUM232	Glimpses of Eternal India	2 0 0	2	**H**
HUM	15CUL231	Excellence in Daily Life	2 0 0	2	**H**		HUM	15HUM233	Glimpses of Indian Economy and Polity	2 0 0	2	**H**
HUM	15CUL232	Exploring Science and Technology in Ancient India	2 0 0	2	**H**		HUM	15HUM234	Health and Lifestyle	2 0 0	2	**H**
HUM	15CUL233	Yoga Psychology	2 0 0	2	**H**		HUM	15HUM235	Indian Classics for the Twenty-first Century	2 0 0	2	**H**
HUM	15ENG230	Business Communication	2 0 0	2	**H**		HUM	15HUM236	Introduction to India Studies	2 0 0	2	**H**
HUM	15ENG231	Indian Thought through English	2 0 0	2	**H**		HUM	15HUM237	Introduction to Sanskrit Language and Literature	2 0 0	2	**H**
HUM	15ENG232	Insights into Life through English Literature	2 0 0	2	**H**		HUM	15HUM238	N S S	2 0 0	2	**H**
HUM	15ENG233	Professional Communication	2 0 0	2	**H**		HUM	15HUM239	Psychology for Effective Living	2 0 0	2	**H**
HUM	15FRE230	Proficiency in French Language (Lower)	2 0 0	2	**H**		HUM	15HUM240	Psychology for Engineers	2 0 0	2	**H**
HUM	15FRE231	Proficiency in French Language (Higher)	2 0 0	2	**H**		HUM	15HUM241	Science and Society - An Indian Perspective	2 0 0	2	**H**
HUM	15GER230	German for Beginners I	2 0 0	2	**H**		HUM	15HUM242	The Message of Bhagwad Gita	2 0 0	2	**H**
HUM	15GER232	Proficiency in German Language (Lower)	2 0 0	2	**H**		HUM	15HUM243	The Message of the Upanishads	2 0 0	2	**H**
HUM	15GER231	German for Beginners II	2 0 0	2	**H**		HUM	15HUM244	Understanding Science of Food and Nutrition	2 0 0	2	**H**
HUM	15GER233	Proficiency in German Language (Higher)	2 0 0	2	**H**		HUM	15JAP230	Proficiency in Japanese Language (Lower)	2 0 0	2	**H**
HUM	15HUM230	Emotional Intelligence	2 0 0	2	**H**		HUM	15JAP231	Proficiency in Japanese Language (Higher)	2 0 0	2	**H**
HUM	15HUM231	Glimpses into the Indian Mind - the Growth of Modern India	2 0 0	2	**H**		HUM	15SWK230	Corporate Social Responsibility	2 0 0	2	**H**
							HUM	15SWK231	Workplace Mental Health	2 0 0	2	**H**