IILM UNIVERSITY GREATER NOIDA

EVALUATION SCHEME

FOR

B. TECH

Robotics & Artificial Intelligence

[Effective from the Session: 2023-27]

Department of Electrical and Electronics Engineering
School of Engineering

Program Structure

(B. Tech Robotics & AI: Total Credits: 172, with Specialization: Total Credits:192)

First Semester								
S.N.	**Course Code**	**Course Category**	**Course Title**	**Credits**	**Contact Hour**	**L**	**T**	**P**
1	UHU1001	HSSC	Communication Skills for Engineers	3	3	2	1	0
2	UBS1001	Basic Science Course	Engineering Mathematics-I	4	4	3	1	0
3	UBS1050	Basic Science Course	Semiconductor Physics	4	5	3	0	2
4	UES1002	Engg. Science Course	Basic Electrical and Electronics Engineering	4	5	3	0	2
5	UES1003	Engg. Science Course	Programming and Problem Solving-C	4	5	3	0	2
6	UAU1001	Audit Course	Environmental Studies	0	2	2	0	0
7	USE1001	SEC	Foundation verbal ability	1	2	0	0	2
			Total	**20**	**26**	**18**	**2**	**6**

Second Semester								
S.N.	**Course Code**	**Course Category**	**Course Title**	**Credits**	**Contact Hour**	**L**	**T**	**P**
1	UBS1004	Basic Science Course	Engineering Mathematics-II	4	4	3	1	0
2	UES1004	Engg. Science Course	Fundamentals of Python Programming	4	5	3	0	2
3	UES1050	Engg. Science Course	Engineering Graphics and Design Lab	2	3	0	1	2
4	UME1001	Engg. Science Course	Fundamentals of Mechanical Engineering	3	3	3	0	0
5	UBS1003	Basic Science Course	Engineering Chemistry	4	5	3	0	2
6	UHU1002	HSSC	Leadership and Teamwork	2	2	2	0	0
7	UES1055	Engg. Science Course	Mechanical Workshop Lab	1	2	0	0	2
8	USE1002	SEC	Professional Verbal Ability & Soft Skills	1	2	0	0	2
			Total	**21**	**26**	**17**	**1**	**8**

Third Semester								
S.N.	**Course Code**	**Course Category**	**Course Title**	**Credits**	**Contact Hour**	**L**	**T**	**P**
1	UBS2001	Basic Science Course	Engineering Mathematics-III	4	4	3	1	0
2	UME2001	Core Course	Engineering Mechanics	4	5	3	0	2
3	UME2002	Core Course	Basic Concepts of Mechatronics	4	5	3	0	2
4	UME2003	Core Course	Digital Electronics	4	5	3	0	2
5	UME2004	Core Course	Electrical Machine & Actuators	4	5	3	0	2
6	UME2005	SEC	Internship Evaluation	2	4	0	0	4
7	USE2001	SEC	Fundamentals In Quantitative Aptitude	2	3	1	0	2
8	UAC301	Audit Course	Universal Human Values: Understanding Harmony	0	3	3	0	0
			Total	**24**	**34**	**19**	**1**	**14**

Fourth Semester								
S.No.	**Course Code**	**Course Category**	**Course Title**	**Credits**	**Contact Hour**	**L**	**T**	**P**
1	UME2006	Core Course	Fundamentals of Dynamics	4	5	3	0	2
2	UME2007	Core Course	Analog Circuits	4	5	3	0	2
3	UME2008	Core Course	Microprocessor & Microcontrollers	4	5	3	0	2
4	UME2010	Core Course	Artificial Intelligence	3	3	3	0	0
5	UME-DE-2001	Department Elective	Department Elective-1	3	3	3	0	0
6	UME-OE-2001	Open Elective	Open Elective -1	3	3	3	0	0
7	UME2009	Core Course	Machine Drawing Lab	1	2	0	0	2
8	UME-EV/DT/IOT/2001	Specialization *	Specialization Elective I	4	4	3	1	0
9	USE2002	SEC	Logical Numeracy	1	2	0	0	2
			Total	**23/27***	**28/32***	**21**	**1**	**10**

Fifth Semester								
S.No.	**Course Code**	**Course Category**	**Course Title**	**Credits**	**Contact Hour**	**L**	**T**	**P**
1	UME3001	Core Course	Kinematics of Robots	4	5	3	0	2
2	UME3002	Core Course	Sensors & Instrumentation	4	5	3	0	2
3	UME3003	Core Course	Control System Engineering	4	5	3	0	2
4	UME3004	Core Course	Machine Learning and Application	3	3	3	0	0
5	UME-DE-3001	Department Elective	Department Elective-II	3	3	3	0	0
6	UME-OE-3001	Open Elective	Open Elective-II	3	3	3	0	0
7	UME3005	SEC	Internship Evaluation	2	4	0	0	4
8	UME-EV/DT/IOT/3001	Specialization*	Specialization Elective II	4	4	3	1	0
9	USE3001	SEC	Corporate Soft Skills	1	2	0	0	2
			Total	**24/28***	**30/34***	**21**	**1**	**12**

Six Semester								
S.No.	**Course Code**	**Course Category**	**Course Title**	**Credits**	**Contact Hour**	**L**	**T**	**P**
1	UME3006	Core Course	Embedded System	4	5	3	0	2
2	UME3007	Core Course	Design of Machine Elements	4	5	3	0	2
3	UME-DE-3002	Department Elective	Department Elective-III	3	3	3	0	0
4	UME3008	Core Course	Robotics, Vision & Control	3	3	3	0	0
5	UME-OE-3002	Open Elective	Open Elective-III	3	3	3	0	0
6	UME3009	Core Course	Industrial Automation Lab	1	2	0	0	2
7	UME-EV/DT/IOT/3002	Specialization *	Specialization Elective III	4	5	3	1	0
8	USE3002	SEC	Campus to Corporate	1	2	0	0	2
9	USE3003	SEC	Arithmetic and Logical Ability	1	2	0	0	2
10	UHU3001	HSSC	Macro Perspective	1	1	1	0	0
			Total	**21/25***	**26/31***	**19**	**0**	**10**

Seven Semester								
S.No.	**Course Code**	**Course Category**	**Course Title**	**Credits**	**Contact Hour**	**L**	**T**	**P**
1	UME4001	Core Course	Digital Signal Processing	4	5	3	0	2
2	UME4002	Core Course	Hydraulic And Pneumatic Systems	3	3	3	0	0
3	UME4003	Core Course	Deep Learning Principles and Practices	4	5	3	0	2
4	UME4004	Core Course	Robotics Lab	1	2	0	0	2
5	UME4005	SEC	Project-I	4	4	0	0	4
6	UME-EV/DT/IOT/4001	Specialization*	Specialization Elective IV	4	6	3	1	0
7	UME-EV/DT/IOT/4002	Specialization*	Specialization Elective V	4	3	3	1	0
8	UME4006	SEC	Internship Evaluation	2	4	0	0	4
9	UHU4001	HSSC	Macro Perspective	1	1	1	0	0
10		MOOCs Course	MOOCS	3	3	3	0	0
			Total	**22/29***	**27/34***	**20**	**0**	**16**

Eight Semester								
S.No.	**Course Code**	**Course Category**	**Course Title**	**Credits**	**Contact Hour**	**L**	**T**	**P**
1	UHU4002	HSSC	Universal Human Values: Understanding Harmony	3	3	3	0	0
2	UHU4003	HSSC	Entrepreneurship and Startups	3	3	3	0	0
3	UME4007	SEC	Project-II	8	8	0	0	8
4		MOOCs Course	MOOCS	3	3	3	0	0
5	UHU4004	HSSC	Macro Perspective	1	1	1	0	0
			Total	**18**	**18**	**10**	**0**	**8**

***Minimum Requirement for Specialization**

- The students should successfully complete 5 specialization courses, each with credit 4 (5x4 =20), minimum 20 credits in the area of specialization.

Definition of Credit: -

1 Hr. Lecture (L) per week 1 credit

1 Hr. Tutorial (T) per week 1 credit

1 Hr. Practical (P) per week 0.5 credits

2 Hours Practical (Lab)/week 1 credits

List of Department Electives (Semester 4 (I), 5 (II), 6 (III)

Sr. No	Departmental Elective	Semester	Course Title
1	DE - I	4	Principle of Communication & Lab
2			Signals & Systems & Lab
3			Manufacturing Processes
4			Smart Materials
1	DE - II	5	Mechatronics System Design
2			Additive Manufacturing
3			Material Science
4			Composite Materials
1	DE- III	6	Micro-Electro-Mechanical Systems (MEMS)
2			Programmable Logic Controller & HMI (Human Machine Interface)
3			Integrated Circuits & Lab
4			Mechanical Vibration

Specialization Electives (SE)

	Specialization Track I Drone Technology	Specialized Track 2 – Electric Vehicle Technology	Specialized Track 3 – IOT
Sr. No	**Course Title**	**Course Title**	**Course Title**
1	Fundamentals of Drone Technology (I)	Power Electronics and EV Drives (I)	IoT Technology and Applications (I)
2	UAV Electronics (II)	EV and Battery Management System (II)	Hardware Architectures for IoT (II)
3	UAV Communication (III)	Automotive Chassis and Suspension	Communication and Networking Technologies in IoT (III)
4	UAV Propulsion (IV)	Digital Image Processing and Computer Vision for Self-Driving Cars (IV)	Software and Programming in IoT (IV)
5	Basics of remote surveying and GIS (V)	Electric and Hybrid Vehicles (V)	Sensors, Actuators and Signal Processing (V)

List of Open Elective (OE) (Semester 4, 5, & 6)

Sr. No	Course Title
1	Data Structure
2	Object Oriented Programming
3	Basics of Database Management System
4	Biology for Engineers
5	Quality Management
6	Non-Conventional Energy Resources Utilization
7	Biomedical Signal Processing
8	Digital and Social Media Marketing
9	Intellectual Property Rights
10	Waste Management in our Daily Life
11	Traffic Engineering and Management
12	Soft Skills for Engineers
13	Applied Computational Methods
14	Human Behaviour
15	Organizational Behaviour
16	Quantitative Techniques in Decision Making

Credit Sheet

S. No.	Course Category	Teaching Hours	Credits
1	Basic Science Course	22	20
2	Engineering Science Course	23	18
3	Core Course	84	69
4	Department Elective	9	9
5	Open Elective	9	9
6	MOOCs Course	6	6
7	Audit Course	2	0
8	Humanities and social science course (HSSC)	14	14
9	Skill Enhancement Course (SEC)	32	27
	Total	**201**	**172**
10	Specialization Course	22	20
	Total	**223**	**192**