

**CHOICE BASED CREDIT SYSTEM
EVALUATION SCHEME
AND
COURSE OF STUDY
IN
B.TECH.
ROBOTICS & AUTOMATION ENGINEERING

(I SEMESTER TO VIII SEMESTER)
SCHEME OF EXAMINATION & SYLLABUS**



(Batch 2026-2030)
GURUKULA KANGRI (DEEMED TO BE UNIVERSITY), HARIDWAR
Faculty of Engineering & Technology
Robotics & Automation Engineering

Syllabus in accordance with AICTE Model Curriculum

(Batch 2026-2030)
GURUKULA KANGRI (DEEMED TO BE UNIVERSITY), HARIDWAR
Faculty of Engineering & Technology
Robotics & Automation Engineering
B. Tech. First Year
Syllabus in accordance with AICTE Model Curriculum

B.Tech. I Year

Semester - I

Semester - I										
DSC/ SEC/ AECC	Subject	Periods			Evaluation Scheme				Total Mark s	Credit s
					Continuo us Internal Assessme nt		CIA Tota l	ESE		
		L	T	P	CT	TA				
THEORY										
BAC-C102/ BAC-C202	Engineering Chemistry	3	1	0	20	10	30	70	100	4
BEM-C102	Engineering Mathematics– I	3	1	0	20	10	30	70	100	4
BCE-C102/ BCE-C202	Programming for Problem Solving	3	1	0	20	10	30	70	100	4
BME-C103	Basic Mechanical Engineering	3	0	0	20	10	30	70	100	3
BEN-A103	Environmental Studies	2	0	0	20	10	30	70	100	0
	Induction Program	Only for first 3 weeks								
PRACTICAL										
BAC-C151/ BAC-C251	Engineering Chemistry Lab	0	0	2	10	5	15	35	50	1
BCE-C151 BCE-C251	Programming for Problem Solving Lab	0	0	2	10	5	15	35	50	1
BME-C153/ BME-C253	Engineering Graphics and Design Lab	1	0	2	10	5	15	35	50	2
BEG-A151/ BEG-A251	Technical Communication	0	0	2	10	5	15	35	50	1
	TOTAL	15	3	8	140	70	210	490	700	20

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B. Tech. I Year					Semester - II						
Subject code	Subject	Periods			Evaluation Scheme				Total marks	Credit	
					Continuous Internal Assessment	CIA Total	ESE				
		L	T	P				CT			TA
THEORY											
BAP-C202	Engineering Physics	3	1	0	20	10	30	70	100	4	
BEM-C202	Engineering Mathematics–II	3	1	0	20	10	30	70	100	4	
BEE-C202	Basic Electrical Engineering	3	1	0	20	10	30	70	100	4	
BET-C202	Electronic Devices	3	1	0	20	10	30	70	100	4	
BHU-S202	Vedic Science & Engineering	3	1	0	20	10	30	70	100	0	
	Summer Training and Internship	A training or internship is to be pursued after II sem, and the credits will be given in III sem after submitting the training certificate followed by presentation									
PRACTICAL											
BAP-C251	Engineering Physics Lab	0	0	2	10	5	15	35	50	1	
BEE-C251	Basic Electrical Engineering Lab	0	0	2	10	5	15	35	50	1	
BET-C251	Electronic Devices Lab	0	0	2	10	5	15	35	50	1	
BME-C152/ BME-C252	Workshop Practice	0	0	2	10	5	15	35	50	1	
BSP-S251	Physical Training & Yoga	0	0	2	0	0	50	0	50	0	
	TOTAL	15	5	10	140	70	260	490	750	20	

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B. Tech. II Year

Semester-III

Schester-III												
S. N. O.	COURSE CODE	COURSE OPTED	SUBJECT	Period per week			EVALUATION SCHEME				Credit	Subject TOTAL
							SESSIONAL EXAM.			XAM. ESE		
				L	T	P	CT	TA	TOTAL			
THEORYSUBJECTS												
1	BEM-C302	BSC-5	Engineering Mathematics-III	3	1	0	20	10	30	70	4	100
2	BME-C306	ESC-6	Theory of Machine	3	0	0	20	10	30	70	3	100
3	BRE-C309	ESC-9	Analog & Digital Electronics	3	1	0	20	10	30	70	4	100
4	BRE-C310	ESC-10	Fundamental of Material Science& Smart Materials	3	0	0	20	10	30	70	3	100
5	BRE-C311	ESC-11	Fundamental of Robotics & Automation	3	0	0	20	10	30	70	3	100
6	BRE-O341	ESC-10	MOOC _S -I(Swayam/NPTEL Course)	3	0	0	20	10	30	70	3	100
PRACTICAL / TRAINING /PROJECT												
7	BRE-C356	ESC-6 Lab	Theory of Machine Lab	0	0	2	10	5	15	35	1	50
8	BRE-C359	ESC-9 Lab	Fundamental of Material Science Lab	0	0	2	10	5	15	35	1	50
9	BRE-C360	ESC-10 Lab	Analog & Digital Electronics Lab	0	0	2	10	5	15	35	1	50
10	BRE-C361	ESC-11 lab	Robot Programming Lab	0	0	2	10	5	15	35	1	50
11	BRE-C370	ESC-10 Lab	Project-I	0	0	2	10	5	15	35	1	50
TOTAL				18	2	10	170	85	255	595	25	850

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(Semester-IV)

				Period per week			EVALUATION SCHEME				Credit	Subject TOTAL	
S. N. O.	COURSE CODE	COURSE OPTED	SUBJECT				SESSIONAL EXAM.		EXAM. ESE				
				L	T	P	CT	TA		TOTAL			
THEORY SUBJECTS													
1	BRE-C411	ESC-16	Biology for Engineers & Biomimetics	3	1	0	20	10	30	70	4	100	
2	BME-C308	ESC-8	Fluid mechanics	3	0	0	20	10	30	70	3	100	
3	BRE-C407	ESC-11	Data Science for Robotics	3	1	0	20	10	30	70	4	100	
4	BRE-C409	ESC-13	Control system and Instruments for Robotics	3	1	0	20	10	30	70	4	100	
5	BRE-C411	ESC-15	Robot Safety& Maintenance	3	0	0	20	10	30	70	3	100	
6	BKT-A403	HSMC-2	Indian Knowledge Tradition	2	0	0	20	10	30	70	0	100	
7	BRE-O441	ESC-14	MOOCS-II	3	0	0	20	10	30	70	3	100	
PRACTICAL / TRAINING / PROJECT													
8	BRE-C358	ESC-8 Lab	Fluid mechanics Lab	0	0	2	10	5	15	35	1	50	
9	BRE-C451	ESC-16 Lab	Data Science Lab	0	0	2	10	5	15	35	1	50	
10	BRE-C457	ESC-11 Lab	Robotics and Control Lab	0	0	2	10	5	15	35	1	50	
11	BRE-C470	ESC-12 Lab	Project-II	0	0	4	10	20	30	70	2	100	
TOTAL				20	3	10	180	105	285	665	26	950	

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B. Tech. III Year

(SemesterV)

S.NO.	COURSE CODE	COURSE OPTED	Course Name	Period per week			EVALUATION SCHEME				Credit	Subject TOTAL
				L	T	P	SESSIONAL EXAM.		XAM. ESE			
							CT	TA		TOTAL		
THEORY SUBJECTS												
1	BRE-C514	PCC	Design of Machine Elements and Transmission Systems	3	1	0	20	10	30	70	4	100
2	BRE-C515	PCC	Advances in Robotics and AI	3	1	0	20	10	30	70	4	100
3	BRE-C512	PCC	Embedded Systems	3	0	0	20	10	30	70	3	100
4	BRE-C516	PCC	Hydraulic and Pneumatics drives for Robotics	3	0	0	20	10	30	70	3	100
5	BME-M001	HSMC	Universal Human Values	3	0	0	20	10	30	70	0	100
6	BRE-O541	PCC	MOOCs-III (Swayam/NPTEL) Course	3	0	0	20	10	30	70	3	100
PRACTICAL / TRAINING / PROJECT												
7	BRE-C564	PCC Lab	Machine Design Lab	0	0	2	10	05	15	35	1	50
8	BRE-C567	PCC Lab	Embedded Systems Lab	0	0	2	10	05	15	35	1	50
9	BRE-C566	PCC LAB	Hydraulic & Pneumatic Driven lab	0	0	2	10	05	15	35	1	50
10	BRE-C570	PCC Lab	Project-III (Summer Training Report)	0	0	2	10	05	15	35	1	50
TOTAL				18	2	8	160	80	240	560	21	800

For the Summer Training and Internship program done in summer break after IV semester examination, A certificate of completion to be submitted along with the report and presentation in the department. In case a student is unable to do an internship in some company, he may do any one extra online/ offline skill enhancement course.

The MOOC courses shall be studied by the student through SWAYAM/NPTEL. Students have to study from Online Platform doubt session shall be held by Internal teachers. Students have to attempt the exams for these MOOC courses conducted by SWAYAM/NPTEL for credit transfer as per university policy.

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B. Tech. III Year (Semester VI)

S.NO.	COURSE CODE	COURSE OPTED	COURSE NAME	Period per week			EVALUATION SCHEME				Credit	Subject TOTAL
							SESSIONAL EXAM.			XAM. ESE		
				L	T	P	CT	TA	TOTAL			
THEORY SUBJECTS												
1	BRE-C611	PCC	Kinematics &Dynamics Manupulators	3	1	0	20	10	30	70	4	100
2	BRE-C613	PCC	Industrial Automation	3	0	0	20	10	30	70	3	100
3	BRE-P62X	PEC	Additive Manufacturing	3	0	0	20	10	30	70	3	100
4	BRE-C62X	PCC	Robot System Design and SLAM	3	0	0	20	10	30	70	3	100
5	BRE-O63X	OEC	Open Elective-I	3	0	0	20	10	30	70	3	100
6	BRE-O641	OEC	MOOCs-IV (Swayam/NPTEL) Course	3	0	0	20	10	30	70	3	100
PRACTICAL / TRAINING / PROJECT												
7	BRE-C661	PCC	Kinematics &Dynamics Manupulators Lab	0	0	2	10	05	15	35	1	50
8	BRE-C662	PCC	Robot System Design & SLAM Lab	0	0	2	10	05	15	35	1	50
9	BRE-C663	PCC	3-D Printing Lab	0	0	2	10	05	15	35	1	50
10	BRE-C670	PCC	Project-IV(Seminar/ Synopsis)	0	0	2	20	10	30	70	1	100
TOTAL				18	1	8	170	85	255	595	23	850

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B. Tech. IV Year (Semester VII)

S.NO.	COURSE CODE	COURSE OPTED	COURSE NAME	Period per week			EVALUATION SCHEME				Credit	Subject TOTAL
							SESSIONAL EXAM.			XAM. ESE		
				L	T	P	CT	TA	TOTAL			
THEORY SUBJECTS												
1	BRE-C711	PCC	Smart Manufacturing	3	0	0	20	10	30	70	3	100
2	BRE-C712	PCC	IoTics for Robotics	3	0	0	20	10	30	70	3	100
3	BRE-C713	PCC	Data Modelling & Visualization	3	0	0	20	10	30	70	3	100
4	BRE-C714	PCC	Drone and UAV	3	0	0	20	10	30	70	3	100
5	BRE-P72X	PEC	Program Elective II	3	0	0	20	10	30	70	3	100
PRACTICAL / TRAINING /PROJECT												
6	BRE-C761	PCC	Smart Manufacturing Lab	0	0	2	10	05	15	35	1	50
7	BRE-C762	PCC	IoTics for Robotics Lab	0	0	2	10	05	15	35	1	50
8	BRE-C763	PCC	Internship/ Industrial Training	0	0	2	10	05	15	35	1	50
9	BRE-C770	PCC	Project-V(Design & Analysis)	0	0	10	40	20	60	140	5	200
TOTAL				15	0	16	170	85	255	595	23	850

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B. Tech. IV Year(SemesterVIII)

Sl. No	Category	Code	CourseTitle	Hoursperweek			Credits
				L	T	P	
1	BRE-	ESC	Robotics Welding	2	0	0	2
2	BRE-	ESC	Program Elective-	2	0	0	2
3	BRE-	ESC	Open Elective-	2	0	0	2
4	BRE-	ESC	Open Elective-	2	0	0	2
5	BRE-C870	PCC	Project-VI (Prototype & Testing)	0	0	16	8
Totalcredits				8	1	16	17

Sr. No.	Course Code	Course Specialization/Track	Program Elective
1	PECRAI-801	Robotics	Autonomous Mobile Robots
2	PECRAI-802	Robotics	Human-Robot Interaction
3	PECRAI-803	Robotics	Medical and Surgical Robotics
4	PECRAI-804	Robotics	Industrial Robot Programming

Sr. No.	Course Code	Course Specialization/Track	Open Elective
1	OECRAI-801	Robotics	Data Analytics for Engineers
2	OECRAI-802	AI	Biomedical Engineering Fundamentals
3	OECRAI-803	Management	Intellectual Property Rights
4	OECRAI-804	Control Systems	Robot Dynamics and Control