GALGOTIAS UNIVERSITY

GALGOTIAS UNIVERSITY NAAC GRADE A+ Accredited University

School of Artificial Intelligence

Bachelor of Technology with Specialization in Quantum Computing
In Association with IBM

2026-2030

Curriculum

First Semester BTECH (Specialization in Quantum Computing)							
S. No.	**Course Code**	**Course Title**	**Credit Structure**				**Total Credits**
			L	**T**	**P**	**S**	**C**
1	101	Mathematics for Quantum Computing	**3**	**0**	**0**	**0**	**3**
2	102	Database Management System	**2**	**0**	**1**	**0**	**3**
3	103	Digital Logic Design	**2**	**0**	**1**	**0**	**3**
4	104	Professional Communication	**2**	**0**	**0**	**0**	**2**
5	105	Innovation lab	**0**	**0**	**2**	**0**	**2**
6	106	Software Foundation & Programming 1 (with C) (IBM)	**3**	**0**	**0**	**0**	**3**
7	107	Software Foundation & Programming (Clean Coding, JavaScript, Node.js) (IBM)	**3**	**0**	**1**	**0**	**4**
Second Semester BTECH (Specialization in Quantum Computing)							
1	201	Data Structures	**2**	**0**	**1**	**0**	**3**
2	202	Quantum Physics	**3**	**1**	**0**	**0**	**4**
3	203	Probability & Statistics	**3**	**0**	**0**	**0**	**3**
4	204	Next Generation Innovation Lab	**0**	**0**	**1**	**0**	**1**
5	205	Software Foundation & Programming 2 (with C++) (IBM)	**3**	**0**	**1**	**0**	**4**
6	206	Data Visualization (IBM)	**2**	**0**	**1**	**0**	**3**
7	207	Indian Knowledge System	**2**	**0**	**0**	**0**	**2**
• After completion of 2nd semester students come with Python Certificate*							
Third Semester BTECH (Specialization in Quantum Computing)							
1	301	Discrete Mathematics	**3**	**0**	**0**	**0**	**3**
2	302	Design & Analysis of Algorithms	**3**	**0**	**1**	**0**	**4**
3	303	Machine Learning with Python	**2**	**0**	**1**	**0**	**3**
4	304	Computer Organization & Architecture	**3**	**0**	**0**	**0**	**3**
5	305	Programming in Java (IBM)	**2**	**0**	**1**	**0**	**3**
6	306	Foundations of Quantum Technologies 3.0 (IBM)	**3**	**0**	**1**	**0**	**4**
Fourth Semester BTECH (Specialization in Quantum Computing)							
1	401	Quantum Machine Learning	**3**	**0**	**1**	**0**	**4**
2	402	Deep Learning	**3**	**0**	**1**	**0**	**4**
3	403	Ethical & Responsible Quantum Computing	**2**	**0**	**0**	**0**	**2**
4	404	Operating Systems	**2**	**0**	**1**	**0**	**3**

5	405	Cloud Application Developer (IBM)	**2**	**0**	**1**	**0**	**3**
6	406	Basic Laboratory Course for Quantum Technologies (IBM)	**1**	**0**	**2**	**0**	**3**
7	407	GPU Programming Lab	**0**	**0**	**1**	**0**	**1**

- After Second year student must go to one Certification

Fifth Semester BTECH (Specialization in Quantum Computing)

1	501	Computer Network	**3**	**0**	**0**	**0**	**3**
2	502	Generative AI Tools	**2**	**0**	**1**	**0**	**3**
3	503	Quantum Security & Cryptography	**3**	**0**	**0**	**0**	**3**
4	504	Elective-I	**2**	**0**	**1**	**0**	**3**
5	505	Deployment of Private Cloud (IBM)	**2**	**0**	**1**	**0**	**3**
6	506	Introduction to Quantum Computation (IBM)	**3**	**0**	**1**	**0**	**4**
7	507	Design Thinking & Innovation Lab	**0**	**0**	**1**	**0**	**1**

Sixth Semester BTECH (Specialization in Quantum Computing)

1	601	Web Services (IBM)	**3**	**0**	**1**	**0**	**4**
2	602	Quantum Security	**3**	**0**	**0**	**0**	**3**
3	603	Elective-II	**2**	**0**	**1**	**0**	**3**
4	604	Quantum Mechanics	**3**	**1**	**0**	**0**	**4**
5	605	UG Research	**0**	**0**	**2**	**0**	**2**
6	606	Hardware Platform for Quantum Technologies (IBM)	**3**	**0**	**1**	**0**	**4**

Seventh Semester BTECH (Specialization in Quantum Computing)

S.No	Course Code	Course Title	L	T	P	S	Credits
1	701	Capstone Project-I	**0**	**0**	**4**	**0**	**4**
2	702	Summer Internship	**0**	**0**	**2**	**0**	**2**
3	703	Elective-III	**2**	**0**	**1**	**0**	**3**
4	704	Blockchain (IBM)	**2**	**0**	**1**	**0**	**3**
5	705	IBM Certification	**0**	**0**	**4**	**0**	**4**
6	706	Introduction to Quantum Communication (IBM)	**3**	**1**	**0**	**0**	**4**

Eight Semester BTECH (Specialization in Quantum Computing)

1	801	Introduction to Quantum Sensing (IBM)	**3**	**0**	**1**	**0**	**4**
2	802	Capstone Project-II	**0**	**0**	**14**	**0**	**14**
3	803	MOOC Certification	**0**	**0**	**2**	**0**	**2**

List of Electives

S.N.	Course Code	Elective 1 (Sem V)	L	T	P	S	Credits
1	504	Computer Vision and Image Analytics	2	0	1	4	3
2	504	Reinforcement Learning	2	0	1	4	3
3	504	Big Data Engineering for AI	2	0	1	4	3
4	504	IoT for Quantum Computing	2	0	1	4	3

S.N.	Course Code	Elective 2 (Sem VI)	L	T	P	S	Credits
1	604	AI Security and Privacy-Preserving ML	2	0	1	4	3
2	604	Edge AI and IoT Intelligence	2	0	1	4	3
3	604	Robotics and UAV	2	0	1	4	3
4	604	Multimodal Generative AI	2	0	1	4	3

S.N.	Course Code	Elective 3 (Sem VII)	L	T	P	S	Credits
1	703	Federated Learning and Distributed AI	2	0	1	4	3
2	703	Human-AI Interaction and AI UX	2	0	1	4	3
3	703	Advanced Natural Language Processing	2	0	1	4	3
4	703	AI in Agriculture	2	0	1	4	3