Annexure I

Requirement of relevant branches/specializations at B.E./B.Tech./ M.E./M.Tech./ and Ph.D. levels for various Departments/Centres:

Sr. No.	Department/ Centre	Branch for Bachelor's Degree	Branch/ Specialization for Master's Programme	Ph.D Degree Specialization, if any	Preferred Areas / Specializations for Teaching/ Research
1.	Computer Science & Engineering	Computer Science & Engineering, Computer Science and Information Technology, Computer Engineering, Information Technology, Computer Science & Technology, Computer Science & Engineering (Artificial Intelligence), Computer Science & Engineering (Machine Learning), Computer Science & Engineering (Data Science), Computer Science & Engineering (Software Engineering), Or Any Other Equivalent related branch	Computer Science & Engineering, Computer Science and Information Technology, Computer Engineering, Information Technology, Computer Science & Technology, Computer Science & Engineering (Artificial Intelligence), Computer Science & Engineering (Machine Learning), Computer Science & Engineering (Data Science), Computer Science & Engineering (Software Engineering), Or Any Other Equivalent related branch	Specialization areas equivalent / related to Computer Science & Engineering, Data Science, Artificial Intelligence or any other equivalent and related area	Artificial Intelligence, Machine Learning, Soft Computing, Natural Language Processing, Speech Technology, Bio-Informatics, Wireless Sensor Networks, Networks & Security, Mobile & Adhoc Networks, Deep Learning, Medical Imaging, IOT & related areas, Software Engineering, Software Testing, Information retrieval, Prediction Algorithms, Cryptography, Data Analytics, Fault-Tolerant Distributed Computing, Explainable Artificial Intelligence and Block chain Technology, IOT, SDN, Wireless Communication, Network Security, AI & ML, VANET, Web Crawling, Dark Web and Deep Web, Latest Areas Related to Covid 19, Automata Theory or any other equivalent and related area
2.	Mathematics (*For Mathematics courses*)	B.A./B.Sc. with Mathematics	M.A./M.Sc. in Mathematics/Applied Mathematics with NET Qualified	Ph.D. Mathematics / Applied Mathematics	All Specializations of Mathematics/ Applied Mathematics
	Mathematics (*For B.Tech Mathematics & Computing programme*)	B.Sc./B.Tech with Mathematics & Computing or B.E./B.Tech in Computer Science & Engineering / CSE & IT / related branches	M.Sc./M.Tech with Mathematics & Computing or M.E./M.Tech in Computer Science or related branches	Ph.D. Mathematics / Applied Mathematics / Computer Science & Engineering	All Specializations of Mathematics / Applied Mathematics / Computer Science & Engineering

3.	Chemistry	Chemistry	M.Sc. in Chemistry/Applied Chemistry	Ph.D. in Chemistry/ Applied Chemistry	Ph.D in Organic/Inorganic/ Analytical/Physical Chemistry and related areas
4.	Physics	-	M.Sc. Physics NET Qualified	PhD	Quantum Materials & Devices, Quantum Sensing & Metrology, Quantum Communication, Quantum Computing, Energy Storage, Theoretical Physics (Condensed Matter Physics)
5.	Electrical Engg.	Electrical Engineering/ Electrical and Electronics Engineering	Electrical/ Power System (Engineering) /Control System (Engineering) /Power Electronics/ Electric Machines/ Electric Drives/ Automation/ Instrumentation/ Electrical Instrumentation/Energy System/ Renewable/ Power Apparatus/ Signal Processing OR at least any one of the above specialization in combination with other specialization.	-	Control Engineering, Power Electronics and Electric Drives, Power System, Electrical Machine
6.	Electronics & Communication Engineering	Electronics and Electrical Communication Engineering, Electronics & Communication Engg., Electronics & Tele communication Engineering, Electronics - VLSI Design and Technology, Electronics Engineering.	Electronics Engg., Electronics Product Design & Technology, VLSI Design, Communication Engg., Electronics & Communication Engg., Electronics & telecommunication Engg., Electronics (VLSI Design), Embedded System, Microelectronics, Microelectronics System Design, Microwave Engg., Optical Communication, Nanoelectronics, Electronics & Electrical Communication Engg., Digital Signal Processing, Digital Image Processing, Semiconductor Technology, Digital Communication,	In all areas equivalent/ related to Electronics and Communication Engineering	Electronic Engg., Electronics & Communication Engg., Electronics & Electrical Communication Engineering, Electrical & Electronics Engineering, Photonics, Microelectronics, Communication Engg., Embedded System, VLSI, Optical Communication, Nanoelectronics, Digital Signal Processing, Microwave Engg., Wireless

			Quantum Technology, OR In all areas equivalent/ related to Electronics and Communication Engineering		Communication, Digital Image Processing, Semiconductor Technology, Digital Communication, Quantum Technology, OR In all areas equivalent/ related to Electronics and Communication Engineering
7.	Aerospace Engineering	Aeronautical/ Aerospace Engg	Aeronautical/ Aerospace/ Aerodynamic Engg./ Propulsion Engineering/ Rocket Propulsion/ Aerospace Propulsion Technology / Space Engineering and Rocketry/ Astronomy & Space Engineering/ Gas Turbine Technology/ Turbo Machinery/ Internal Combustion Engine and Turbo Machinery/ Mechanical in Rotodynamics/ Roto Dynamic Machines/ Avionics/ Flight Mechanics / Aerospace Materials and any other relevant area.	Aeronautical / Aerospace / Any Allied Branch	Avionics, Aerodynamics, Propulsion, Structures, Flight Mechanics, Control & guidance, any other relevant area.
8.	Centre of Management & Humanities: ***(For*** Management courses)	Bachelor's Degree in any specialization with 3 years/4 years from Recognized University	Master of Business Administration (MBA)/ Master of Business Management (MBM)/ Master of Commerce (M.Com)/ Two years full time Post Graduate Diploma in Management (PGDM) declared equivalent by AIU or recognized by the AICTE/UGC from an Indian University or an equivalent degree from an accredited foreign university	Ph.D or Fellow Programme in Management	Finance, Entrepreneurship, Marketing, Human an Resource Management/ Organization Behaviour
	Centre of Management & Humanities: ***(For*** English courses)	Bachelor's Degree in any specialization with 3 years/4 years from Recognized University	Master's Degree in English Language Teaching/ English Literature	Ph.D	English Language Teaching / English Literature

9.	Civil Engineering	Civil Engineering	Structural Engg. / Transportation Engg. /Environmental Engg. / Water Resources Engg./Geotechnical Engg.	Civil Engineering	Structural Engg., Transportation Engg., Water Resources Engg., Environmental Engg., Geotechnical Engg
10.	Production and Industrial Engineering: ***(For*** Bachelor of Design (B. Des.) programme)	Bachelor of Design (B.Des)	Master of Design (M. Des)	Design or in related area	Product Design, Industrial Design, Animation Film Design, Artificial Intelligence in Design, Interaction Design, Information Design, Digital Game Design, Exhibition Design, Film & Video Communication, Graphic Design, New Media Design, Vehicle Design, Product Design and Development, Filmmaking, Cinematography, Editing, Sound Design, Music Production, VFX, Visual Communication, Typography and Publication Design, Digital Media, Augmented Reality, Virtual Reality, Usability, Human Centered Design, Information Architecture, Basic Design, Advertising and Branding/Strategic Design, IOT in Design, Painting, Sculpture, Applied Art
		Bachelor of Technology (B.Tech/BE)	Master of Design (M. Des) /M Tech/ ME		
		Bachelor of Architecture (B.Arch.)	Master of Design (M. Des)		
		Bachelor of Fine Arts (BFA) (4 year course) and Bachelor of Arts (4 year course)	Master of Design (M. Des) / Master of Fine Arts (MFA)		
11.	Mechanical Engineering	Mechanical Engineering	Mechanical Engineering, Mechanical Engineering with specialization in CAD/CAM/ CAE, Production Engineering, Manufacturing Engineering/ Manufacturing Technology, Design Engineering, Mechanical Design, Tribology, Fluid and Thermal	Production Engineering, Thermal Engineering, Design Engineering, Industrial Engineering, Non-Conventional Machining / Advanced Manufacturing, Supply Chain	Advance Manufacturing / Micro and Nano fabrication, Mechanical Design, Advanced Vibrations and Acoustics, Finite Elements Methods, Advanced Thermal & Heat Transfer, Industrial Engineering and Quality Management,

			Engineering, Industrial Engineering, Production & Industrial Engineering, Rotodynamics, Material Science and Technology, Automobile Engineering, Internal Combustion Engines and Turbo Machinery, Manufacturing Technology and Automation, Advanced Manufacturing Systems, Industrial Engineering and Management, Robotics, Mechatronics, Industrial Automation and Controls, Digital Manufacturing, Product Design and Manufacturing.	Management, Tribology, Additive Manufacturing, Mechatronics, Robotics & Automation, Artificial Intelligence in Mechanical Systems, Industry 4.0 and Smart Manufacturing, Advanced Welding & Joining Technologies, Micro/Nano Manufacturing, Thermal Energy Storage Systems, Fracture Mechanics & Fatigue.	Material Science & Processing, Surface Engineering, Renewable Energy and Alternate Cleaner Fuels, Hydrogen Fuel, Manufacturing Engineering, Fracture Mechanics & Fatigue, Computational Fluid Dynamics (CFD).
12.	Metallurgical & Materials Engineering	Metallurgy, Metallurgical and Materials, Materials and Metallurgical (Engineering/Technology), Materials Science and Metallurgy, Materials Science and Engineering, Metallurgical Engineering and Materials Science, Mechanical Engineering	Metallurgical Engineering, Materials Science and Engineering, Materials Science and Metallurgy, Metallurgical and Materials Engineering, Materials and Metallurgical Engineering, Foundry-Forge Technology, Industrial Materials and Metallurgy, Industrial Metallurgy, Process Metallurgy, Materials Engineering, Materials Science	Ph.D in relevant area	Materials/Metallurgy