

Annexure – I
Desirable Areas of Specialization

Assistant Professor

| Sl. No | Departments | Desirable Area / Specialization |
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| 1. | Architecture | Digital Architecture, Building Engineering and Management Construction Management, Building Technology, Urban Design, Housing, Sustainable Architecture, Energy Efficient Building Design, General Architecture. |
| 2. | Chemical Engineering | B.E. / B.Tech. or equivalent in Chemical Engineering M.E. / M.Tech. in Chemical Engineering and related specializations Ph.D. in any of the following specializations: Process Optimization, Process Intensification, Process Modelling and Simulation, Process Dynamics and Control, Computational Fluid Dynamics, Advanced Materials, Biomedical Engineering |
| 3. | Chemistry | Inorganic Chemistry, Physical Chemistry, Analytical Chemistry, Organic Chemistry |
| 4. | Civil Engineering | Environmental Engineering, Construction Technology, and Management, Structural Engineering (Computational Mechanics), Structural Engineering (Steel – Concrete composites, Concrete and Building Materials, Structural Dynamics and Vibration Control, Uncertainty modelling and sensitivity analysis of structures), Geotechnical Engineering and Rock Mechanics, Transportation Engineering (Traffic Modelling), Water resources (GIS application in Urban Climatology) |
| 5. | Computer Applications | Data Structures and Algorithms, Operating Systems, Database Management Systems, Computer Networks and security, Distributed Computing, Distributed Technologies, Cloud Computing, Internet of Things, Image Processing and Computer Vision, Theoretical Computer Science, Computational Intelligence, Machine Learning and Data Analytics, Natural Language Processing, Quantum Computing, Mathematical and Statistical computing, Optimization, Soft computing, Software Engineering, High Performance Computing, Block Chain Technologies, Cyber Physical Systems, Big Data Management |
| 6. | Computer Science and Engineering | B.E. / B.Tech. or equivalent in CS / CSE / IT and M.E. / M.Tech. / M.S. in CSE / IT or equivalent and Ph.D. in any one of the following Specializations: Theoretical Computer Science, Algorithms, Graph Theory, Distributed Systems and Computing, Cloud Computing, Computer Architecture, Databases, Natural Language Processing, Data Science, Computer Networks, Software Engineering, Software Systems, Information Security, Machine and Deep Learning, Artificial Intelligence, Parallel Computing, Embedded Systems, Operating Systems, Speech and Vision, High Performance Computing, Augmented and Virtual Reality |
| 7. | Electrical and Electronics Engineering | B.E./B.Tech. or equivalent in Electrical Engineering / Electrical and Electronics Engineering M.Tech./M.E./M.S. in the desired specialization and Ph.D. or Direct Ph.D. Specializations: Energy Engineering, Renewable Engineering, Power & Energy, Computer Networks, Power Systems, Power Electronics, Industrial Drives & Control, Control Systems, High Voltage Engineering, |

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| | | Applied Electronics, Electronics, VLSI design, Artificial Intelligence, Power Electronics and Drives |
| 8. | Electronics and Communication Engineering | B.E./B.Tech. in Electronics and Communication Engineering, Electronics and Telecommunication Engineering, Electronics Engineering, Electrical Communication Engineering M.E./M.Tech. in Microelectronics, Embedded System, VLSI Design / Systems / Technology, VLSI Design and Automation Techniques, Communication Systems, Signal and Image Processing, Wireless Communication / Networks. Ph.D. in Microelectronics, Embedded System, VLSI Design / Systems / Technology, VLSI Design and Automation Techniques, Mixed Analog Signal and RFIC Design, VLSI Subsystem Testing and IC Packaging, VLSI Signal Processing and CAD Tool Algorithms, Device modelling, Electronics Engineering, Signal and Image Processing, Wireless Communication / Networks. |
| 9. | Energy and Environment | B.E./B.Tech. or equivalent in Mechanical Engineering /Electrical Engineering and M.E./M.Tech. or equivalent in Mechanical / Electrical / Energy/ Energy and Environmental Engineering with doctoral (preferably from an energy centre or energy Department) / Postdoctoral / Industry / R&D work predominantly focussed on energy aspects of renewable energy systems / alternative energy systems / advanced energy technologies. |
| 10. | Humanities and Social Sciences | For English: English Language and Literature For Economics: Economics, Entrepreneurship Development |
| 11. | Instrumentation and Control Engineering | B.E./B.Tech. and M.E./M.Tech. with any one degree in Instrumentation and Control Engineering / Instrumentation / Electronics and Instrumentation. Research Specializations: Robotics & Automation / Cyber Physical System, Cyber Security / Artificial Intelligence / Machine Learning / Deep Learning for Instruments and Measurements applications / MEMS, Flexible Sensors and Electronics / Optical and Laser Based Instrumentation / Nonlinear Control / Network Control Systems / Control Theory / High Performance Computing in Control Systems / Fault Diagnostics and Detection / Automotive Systems. |
| 12. | Management Studies | Two years full time in Master of Business Administration with specialization in Finance. Ph.D. in Management / Business Administration with specialization in Finance. |
| 13. | Mathematics | Probability Theory and Stochastic Processes, Mathematical Bio-Sciences, Numerical Analysis, Fluid Mechanics, Fuzzy Mathematics, Graph Theory and Graph Algorithms |
| 14. | Mechanical Engineering | B.E. / B.Tech. in Mechanical Engineering M.E. / M.Tech. in Industrial Safety Engineering Ph.D. in Industrial Safety / Process Safety |
| 15. | Metallurgical and Materials Engineering | Both UG and PG with first class in Metallurgy / Metallurgical Engineering / Metallurgical and Materials Engineering / Metallurgical Engineering and Materials Science/ Materials Science and Engineering / Materials Engineering. Ph.D. with specialization in Process Metallurgy, Extractive Metallurgy, Non-Metallic Materials, Physical Metallurgy, Non-Destructive Testing, Computational Materials science, Mechanical behavior of materials OR Any emerging area of specialization related to its disciplines in Metallurgy / Metallurgical Engineering / Metallurgical and Materials Engineering / |

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| | | Metallurgical Engineering and Materials Science / Materials Science and Engineering / Ceramic Engineering / Polymer Technology / Electro-chemical Engineering |
| 16. | Physics | B.Sc. (Physics) M.Sc.(Physics)/ M.Sc. (Applied Physics)/M.Sc. (Materials Science) Ph.D. in any of the following specializations: Condensed Matter Experimental Physics, Theoretical Physics, Materials Science, Soft Condense matter and Non Destructive Evaluation |
| 17. | Production Engineering | B.E. / B.Tech. in Production / Manufacturing / Mechanical / Industrial Engineering. M.E. / M.Tech. in Manufacturing Technology, Production Technology, Production Engineering, Manufacturing Engineering, Manufacturing Science, Industrial Engineering, Industrial Management, Industrial Systems Engineering, CIM, Maintenance Engineering, Product design and development, CAD & Manufacturing, Mechatronics Engineering, CAD/CAM and Automation, Additive Manufacturing, Integrated Design and Manufacturing Ph.D. field of Specialization in Operation Research, Data Analytics / Data Science, Maintenance Engineering, Casting Technology, Mechatronics / Robotics, Additive Manufacturing, CAD/CAM/CIM, Product Design and Development, Quality Engineering, Design for Manufacturing, Smart Manufacturing |

NOTE I: Serving faculty members shall be eligible to apply for higher positions in their own Departments irrespective of their specializations, if they satisfy the required qualifications and other terms as per the Schedule E of the First Statute of NITs (Amendment 2017).