



NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA, SURATHKAL
P.O. SRINIVASNAGAR – 575025, MANGALURU.

Annexure – I

Desirable Areas of Specialization

Sl. No.	Department	Areas of Specialization
1.	Chemical Engineering	Transfer Operations, Biotechnology, Catalysis, Process Development, Particulate Systems, Energy and Environmental Engineering, Process Modelling and Simulation, Process Control.
2.	Civil Engineering	<ul style="list-style-type: none"> • BE or B.Tech in Civil Engineering with Master's in Construction Management / Construction Technology / Construction Technology and Management / Construction Engineering and Management / Construction Engineering and Infrastructure Management and Ph.D. with preferable specialization in the following: <ol style="list-style-type: none"> a) Construction Project Management b) Automation and Digitization in Construction c) Organization Behavior and Human Resource Management in Construction d) Quality and Safety Management in Construction e) Finance and Accounting in Construction • BE or B.Tech in Civil Engineering / M.Sc (Geology /Earth sciences/ Applied Geology) with NET or SLET qualification / M.Tech (Engineering Geology/Earth sciences) and Ph.D. (Geology / Earth Sciences) with specialization in Engineering Geology / Petrology / Structural Geology/Geophysics.
3.	Computer Science & Engineering	<ul style="list-style-type: none"> • Algorithms, Operating Systems, Compilers, Data Structures, Networking, Database Management Systems, Digital Systems, Software Engineering, Computer Architecture and Organization. • Signal (Image, Speech, Under water) Processing, Cloud Computing, Bigdata Analytics, Security, Human Computer Interaction, Theoretical Computer Science, Machine Learning, High Performance Computing, Internet of Things.
4.	Electronics & Communication Engineering	<ul style="list-style-type: none"> • Microwave and Millimetre wave communication, Wireless Communication and Networks, IoT and sensor network Architectures for 5G/6G networks. • Broad domain of Signal Processing and Machine learning with specialization in Audio and Speech, Multirate Signal Processing, Sparse Signal Processing, Natural Language Processing Image and Biomedical Signal Processing and Pattern Recognition. • Architecture in Embedded Systems and Architectures, Embedded computing for IoT systems, Rapid prototyping, Reconfigurable and Multi-core architectures and design.
5.	Electrical & Electronics Engineering	Control Systems Engineering and High Voltage Engineering (with Electrical Power background) with under graduate & post graduate degree in Electrical Engineering.
6.	Information Technology	Algorithms Design / High Performance and Parallel Computing / Human Computer Interaction / Web Technologies / Database System / Software Engineering / Distributed Computing / Soft Computing / Data Analytics and Knowledge Discovery / Theoretical Computer Science / Data Science /

		Optimization Techniques / Game Theory / Machine Learning / Deep Learning / Reinforcement Learning / Computer Vision / Pattern Recognition / Cloud Computing / Digital Signal Processing / Computer System Design / Operating Systems / Artificial Intelligence
7.	Mathematical and Computational Sciences	<ul style="list-style-type: none"> • B.Tech, M.Tech and PhD in Computer Science and Engineering/ Information Science and Engineering/ Information Technology, with specialization in <ol style="list-style-type: none"> a) Machine learning b) Big data Analytics c) Data Science d) Cloud Computing e) Fog Computing f) Blockchain Technology g) Internet of Things h) Theoretical Computer Science i) High Performance Computing j) Software Engineering • BSc, MSc (Statistics) and PhD (Statistics)
8.	Mechanical Engineering	Industrial Engineering/ Automobile Engineering/ Product Design/ Mechatronics/ Robotics/ CAE
9.	Metallurgical & Materials Engineering	Iron and Steel Technology/ Extractive Metallurgy/ Physical Metallurgy/ Mechanical Metallurgy/ Computational materials engineering
10.	Mining Engineering	<ul style="list-style-type: none"> • Mines Health and Safety • Mine Environment • Mineral Processing • Mine Planning and Design
11.	School of Management	<ul style="list-style-type: none"> • Economics (with MA/MSc in Economics and PhD in Economics) • English (with MA in English and PhD in English) • Human Resource Management (with MBA/MTech in relevant discipline, and PhD in HR) • Finance (with MBA/MTech/MSc in relevant discipline, and PhD in Finance) • Production and Operations Management (with MBA/MTech/MSc in relevant discipline, and PhD in Production and Operations) • Information Systems and Analytics (with MBA/MTech in relevant discipline, and PhD in Information Systems and Analytics)
12.	Water Resources and Ocean Engineering	<ul style="list-style-type: none"> • Remote Sensing and GIS-Applications in Hydraulics/ Water Resources Engineering. Natural Resource Mapping. • Hydraulics/Water Resources Engineering and Management