

**IIT Madras - Special Drive for SC/ST/OBC-NCL on Mission Mode-2**

**Specialization Areas**

**Advt.No.IITM/R/1/2022 Dt 13.07.2022**

Basic qualifications and experience for the post of **Assistant Professor (Grade-I / II)** is based on MoE norms and specified in the detailed advertisement at Section A & B. In addition to the basic qualifications and experience required for eligibility, applicants are expected to have an outstanding academic record and outputs. Candidates must clearly demonstrate their capability in the specialization area applied for through publications in relevant reputed journals.

Department-wise specific qualification requirement (if any), and areas of specialization sought are detailed in the table below.

SNo	Department	Specific Qualification Requirement	Specialization Area
1	<b>Chemical Engineering</b>	At least one degree in Chemical Engineering.	All areas of Chemical Engineering
2	<b>Civil Engineering</b>	Basic degree in Civil Engineering*  *Exceptional candidates with basic degree in allied areas will be considered in the following areas: Infrastructure and Construction Management / Environmental Engineering / Transportation Engineering	(i) Infrastructure and Construction Management (ii) Environmental Engineering (iii) Hydraulics and Water Resources Engineering (iv) Geotechnical Engineering (v) Structural Engineering (vi) Transportation Engineering
3	<b>Computer Science &amp; Engineering</b>	Specific Qualification*	All areas of Computer Science and Engineering
<p>Specific Qualification*</p> <ul style="list-style-type: none"> <li>● <b>Bachelor's Degree:</b> Candidates must have an engineering degree in Computer Science/ Computer Science and Engineering/ Computer Engineering.</li> <li>● <b>Master's Degree:</b> Candidates must hold a master's degree in engineering from Computer Science/ Computer Science and Engineering/ Computer Engineering program. [This may be waived if the candidate was admitted to a direct Ph.D. program after the Bachelor's degree.]</li> <li>● <b>Ph.D. Degree:</b> Must be in Computer Science/Computer Science and Engineering/ Computer Engineering. Ph.D. degree is required.</li> </ul> <p>Applications of candidates with deviations to the educational qualification norms may be considered if they have an exceptionally strong record of publications in areas related to Computer Science and Engineering.</p>			

**Annexure -1**  
**(revised-1)**

SNo	Department	Specific Qualification Requirement	Specialization Area
4	<b>Electrical Engineering</b>	<p>a) Candidates must have at least one degree in Electrical Engineering (Or) Candidates with degrees in Computer Science and Engineering / Physics and with strong research record in the areas of interest to EE Department may also be considered</p> <p>b) All candidates must be willing to teach core undergraduate EE courses</p>	<p>(i) Wireless Communications, Networks, Signal Processing, Machine Learning</p> <p>(ii) Power Electronics &amp; Motor Drives, Power Systems, Power Quality and High Voltage Engineering</p> <p>(iii) MEMS sensors and technology; GaN device technology; Technology for organic semiconductor devices</p> <p>(iv) Electronic System Design, Bio-Medical Instrumentation</p> <p>(v) RF and Photonics (focusing on Microwave and mm wave Photonic Technology)</p> <p>(vi) Analog, Mixed-signal, and RF IC design; Digital Systems Design and Architecture</p> <p>(vii) Learning approaches in Modelling and Control of Dynamical Systems, Computational Methods in Optimization, Cyber Physical Systems</p>
5	<b>Engineering Design</b>	<p>a) Bachelor's degree in Mechanical / Automobile / Engineering Design</p> <p>b) Bachelor's degree in Engineering Design/Electrical/Electronics/ /Mechanical/ Automobile</p> <p>c) Bachelor's degree in Engineering Design/Electrical/Electronics/ /Mechanical/ Biomedical Engg.</p> <p>d) Bachelor's degree in Engineering Design/ Mechanical/ Production / Design</p> <p>e) Bachelor's degree in Engineering Design/ Mechanical/ Production / Design/Computer science and Engineering</p>	<p>(i) Autonomous vehicle design (Demonstrated research experience during PhD in Sensor technology / Artificial intelligence / Image processing applied to autonomous vehicles design)</p> <p>(ii) Two-wheeler design (Demonstrated research experience during PhD, and at least 3 years experience after PhD in two-wheeler industry)</p> <p>(iii) Electric Vehicle Design (Demonstrated research experience during PhD in Battery Technology/ E-Drive System Design and Integration/ Alternate Vehicle Propulsion Energy Sources).</p> <p>(iv) Medical Device Design and development (Demonstrated research experience during PhD and translational research experience preferably in developing hardware for medical devices)</p> <p>(v) Industrial design (With demonstrated research experience in Human Factors/ Form design/ Aesthetics at doctoral level and translational research experience)</p> <p>(vi) Computational Design (Demonstrated research experience in developing novel algorithms and/or applying Artificial Intelligence and / or employing Virtual Reality /Augmented Reality/Mixed Reality in the field of Computational Design /Analysis / Manufacturing)</p>
		<p><i>Bachelor's degree should be a 4-year professional degree.</i></p> <p><i>Post-PhD experience in translational research will be an added advantage</i></p>	

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SNo	Department	Specific Qualification Requirement	Specialization Area
6	<b>Humanities &amp; Social Sciences</b>	Ph.D. in related domain	(i) Indian Writing in English (ii) Political theory (iii) Urban sociology (iv) Analytical philosophy
7	<b>Management Studies</b>	a) Ph.D. in area of Information Systems	(i) Information Systems
		b) Ph.D. in area of Marketing Management	(ii) Marketing Management
		c) PG: A two-year full time master degree program in Human Resource Management (HRM) or an equivalent 2 year full time program in PMIR/MSSW/MBA(HRM)  Ph.D. in area of Human Resource Management (HRM)	(iii) Human Resources Management
8	<b>Mechanical Engineering</b>	At least one degree (Bachelors / Masters / Ph.D.) in Mechanical Engineering	(i) Bio-microfluidics (ii) Refrigeration, Air Conditioning and Cryogenic Engineering (iii) Additive Manufacturing (iv) Open source software development in Mechanical Engineering (v) Experimental Methods in Acoustics & Dynamics (vi) Mechanical Design of EV (systems / structures / component) (vii) Healthcare diagnostic systems (viii) Battery Thermal Management/Fuel Cells (ix) Hybrid/Hydrogen Fueled IC Engine (x) Smart Manufacturing (xi) Design Applications of Soft/ Bio-Materials/ Smart Materials/Metamaterials (xii) Dynamics & Control of Mechanical Systems
9	<b>Ocean Engineering</b>	Ph.D relevant to Ocean Engineering / Naval architecture. Possess excellent academic record with first degree in engineering in Naval Architecture/Civil/ Mechanical /Ocean	(i) <b>Naval architecture:</b> Ship structures; Ship design & Ship building; Ship Motion/Maneuvering; Ship hydrodynamics; Recent techniques in ship design & construction; Ship machinery & systems; Autonomous and Green ships; Marine Engineering. (ii) <b>Ocean Engineering:</b> Coastal and Ocean Hydrodynamics; Offshore structures; Harbour & Coastal structures; Coastal Engineering; Offshore and Deepwater Engineering; Waterway and Port Engineering, Geotechnical Engineering for Offshore and coastal structures, Instrumentation in Ocean Engineering.

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SNo	Department	Specific Qualification Requirement	Specialization Area
	<b>Ocean Engineering</b>	Ph.D. relevant to Upstream Petroleum Engineering. Posses excellent academic record with first degree engineering in petroleum engineering /Civil/ Mechanical / Chemical.	(iii) <b>Petroleum Engineering:</b> All areas related to Upstream Petroleum Engineering Activities.