

IIT Madras - Faculty Recruitment - Specialization Area - (2021b)

Advt.No.IITM/R/2/2021 Dt.28.04.2021

Basic qualifications and experience for the post of **Professor** is available 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 exceptional academic record commensurate with the post applied. Department-wise areas of specialization advertised and specific qualification requirements (if any) are detailed in the table below:

SNo	Department	Specific Qualification Requirement	Specialization Area
1	Aerospace Engineering	Specific Qualification*	(i) Mechanics & Multiphysics modelling of advanced composites, aeroelasticity. (ii) Experimental & analytical research in shock wave reflections and interior & intermediate ballistics
<p>*Candidates should have clear focus in one or more of the listed areas and have aero background as detailed below:</p> <ul style="list-style-type: none"> ● At least one degree (Bachelor's, Master's, Doctoral) in Aerospace Engineering. (OR) ● At least 3 years teaching experience in handling undergraduate / graduate level courses related to Aerodynamics / Flight Mechanics / Aircraft Propulsion / Aerospace Structures in an Aerospace Engineering department at an IIT / IIST Trivandrum / reputed university abroad. (OR) ● PhD thesis relevant to Aerospace Engineering and awarded by a university without an Aerospace Engineering department. 			
2	Applied Mechanics	--	(i) Multiphysics modeling of georesources and CO ₂ sequestration. (ii) Mechanics of Polymer Thin Films: Experimental & Molecular Modeling.
3	Biotechnology	Specific Qualification*	(i) Structural Enzymology.
<p>*Biotechnology</p> <ol style="list-style-type: none"> a) Bachelor's degree in Maths/ Physics/ Chemistry. b) Master's degree in Maths/ Physics/ Chemistry. c) Ph.D in Protein Crystallography. <p>Candidates must have demonstrated research capability in the advertised area through publications in relevant journals, doctoral guidance, sponsored project coordination and building sophisticated research infrastructure. He/she must also have substantial and relevant experience of teaching undergraduate and graduate courses in the advertised area.</p>			

4	Chemical Engineering	At least one of the degrees to be in Chemical Engineering.	(i) All areas in Chemical Engineering
5	Chemistry	--	(i) Organo and organometallic catalysis with research focus on functionalization of chemical bonds and heterocyclic chemistry (ii) Asymmetric and natural product synthesis (iii) Physical chemistry with specialization in electrochemistry and design of efficient non-conventional energy sources such as batteries and fuel cells.
6	Civil Engineering	a) Candidate should have Bachelor and Advanced degrees in relevant branches of Engineering / Physical Sciences / Earth System Sciences.	(i) Aerosol, biosphere & climate interaction
		b) Candidate should have a Bachelor's degree in Civil Engineering.	(i) Water & Wastewater Treatment (ii) Soil Dynamics (iii) Geoenvironmental engineering
7	Computer Science & Engineering	Specific Qualification [#]	All areas
<p>[#]Computer Science & Engineering:</p> <ul style="list-style-type: none"> ● Bachelor's Degree: Candidates must have an engineering degree in Computer Science and Engineering. Candidates with a Bachelor's degree in Electrical Engineering (with specialization in Electronics and Communications) or in Electronics and Communications Engineering may also apply if their records clearly demonstrate ability to teach core computer science courses. ● Master's Degree: Candidates must hold a master's degree in engineering from a two-year long (or equivalent) Computer Science/Computer Science and Engineering/Computer Engineering program. <i>[This may be waived if the candidate was admitted to a direct Ph.D. program after the Bachelor's degree.]</i> ● Ph.D. Degree: Ph.D. degree is required. Must be in Computer Science/Computer Science and Engineering/Computer Engineering. 			
8	Electrical Engineering	At least one degree in Electrical Engineering	(i) High Frequency High Gain DC-DC Resonant power conversion systems. (ii) Architectures for high-performance/low-power signal processing. (iii) Statistical learning and statistical methods for wireless communications. (iv) Biomedical instrumentation and devices with product development experience
9	Engineering Design	a) Bachelor's degree in Electrical/Electronics <i>Bachelor's degree should be 4-year professional degree</i>	(i) Biomedical device instrumentation & control.

10	Humanities & Social Sciences	--	(i) Economics (Industrial Economics) (ii) Philosophy (Social and political philosophy; Applied ethics and higher education)
11	Management Studies	Ph.D. in Operations Management / Industrial Engineering with excellent academic record and experience as per eligibility requirement	(i) Operations Management
12	Mathematics	Both Master's Degree and Ph.D. In Mathematics.	(i) Differential Equations (ii) Theoretical Computer Science
13	Mechanical Engineering	At least one degree (BE/ME/ MTech) in Mechanical Engineering/ Allied Disciplines Candidate must have demonstrated the capability in any of the advertised areas through publications in relevant reputed journals and/or awarded patents or products developed.	(i) High speed machining and grinding (ii) Mechanical Micro and Nanomachining (iii) Computational Methods including Machine Learning in Thermal Sciences (iv) Micro and Nano Scale Energy Transport (v) Microfluidics
14	Metallurgical and Materials Engineering	Atleast one degree (Bachelor's/Master's degree) in Metallurgical or Materials Engineering.	(i) High temperature deformation of advanced materials (ii) Powder metallurgy and reactive sintering
15	Ocean Engineering	Ph.D relevant to Petroleum Engineering with excellent academic record with post graduate degree in Marine Geo-Physics / Geo-Mechanics	(i) Petroleum Engineering: Petroleum Geo-Mechanics.
16	Physics	--	(i) Experimental and Computational Condensed Matter Physics (ii) Experimental Atomic and Molecular Physics

Interdisciplinary areas: IIT Madras recognizes the importance of interdisciplinary areas. The candidates are encouraged to send their applications to departments in which they are best suited as well as to the virtual 'interdisciplinary' department. The candidates will be categorized as 'interdisciplinary' if (a) their research interests are in the area below and (b) such research cannot be done in one department alone.

Departments - Interdisciplinary	Specific Qualification Requirement	Area
Electrical Engineering - Physics	At least one degree in Electrical Engineering	(i) Phase Change Memory Devices