

IMT Grand Challenges - Lista de projetos "Grandes Desafios do IMT"

Atualizado em:
29/03/2026 | Wãnderson

Area codes->	A = Sustainability
	B = Healthy
	C = Safety
	D = Joy of Living

Project #	NAE Grand Challenge Main Area	Main Area code	Codes for Main and secondary areas	GSCP-IMT Related Project Theme	Coordinating Program/Entity.	Mentors	Sponsors (IMT, Industries, other College or Universities, government research-funding institutions, etc.)	Last Status Update (by Program Coordinator)	Launched (Yr)
2	Safety	C	A, B, C, D	River and Flood alert Monitoring System	CP-IMT, Mechanical Engineering, Electronics Engineering.	Alessandra Dutra Coelho, Fernando de Almeida Martins (CP-IMT), João de Sá Brasil Lima, Wãnderson de Oliveira Assis,	São Caetano do Sul Prefecture/ USCS / Thales/ IMT	mar/2025: Prof. Angelo; mar/2026: Prof. João Brasil; Prof. Sérgio;	2020
5	Sustainability	A	A	Renewable Energy - Wind Energy (rotor aerodynamics, efficiency, Wind Turbine Noise and WTN legislation, siting, simulation).	Mechanical Engineering	Joseph Youssif Saab Junior	IMT, EPUSP	mar/2026: Prof. João Brasil	oct/2020/Prof. Susana
6	Sustainability	A	A	Renewable Energy - Ocean Wave energy	Mechanical Engineering	João de Sá Brasil Lima	IMT	mar/2026: Prof. João Brasil	2021
12	Joy of Living	D	A, C, D	Chemical and Biochemical Processes - Microwave applications in Chemical Industry	Chemical Engineering	Edmilson Renato de Castro	IMT, FAPESP	mar./2026: Profa. Roberta Albanez	2020
13	Sustainability	A	A	Smart cities: Data science applied to flood prediction and people urban mobility	Civil Engineering, Computer Engineering	Ângelo Sebastião Zanini, Paula Katakura, Rafael Ribeiro Plácido, Peter Ribon Monteiro	IMT	mar/2026: Prof. Pedro Lyra; mar/2025, Prof. Angelo	2024
14	Safety	C	C, D	Construction of Building Information Modeling (BIM)	Civil Engineering	Paula Katakura, Mariana Fontes Pérez Rial	internal, with external industry and public entities awards received in the last few years	mar/2026: Prof. Pedro Lyra	2020
15	Safety	C	C	Information Security / Cyber Security	Computer Engineering	Ângelo Sebastião Zanini, Everson Denis	IMT, FAPESP	mar/2025: Prof. Angelo	2020
17	Sustainability	A	A, B, D	Smart Vegetable Garden	CP-IMT, Electronics Engineering, Chemical Engineering.	Alessandra Dutra Coelho, Fernando de Almeida Martins, Wãnderson de Oliveira Assis	IMT, EMBRAPA, FAPESP	mar/2026: Prof. Sérgio; Prof. Angelo	2020
20	Sustainability	A	A, B, C, D	E-Mobility Design Solutions with Fuel Cell and LiPO Battery	CP-IMT, Electronics Engineering, Electrical Engineering.	Fabio Delatore, Fernando de Almeida Martins.	AVL/Daimon	mar/2026: Prof. Sérgio	2020
22	Joy of Living	D	A, B, C, D	Hardware Platform for Weblab Applications - Education	CP-IMT, Electronics Engineering, Control and Automation Engineering.	Alessandra Dutra Coelho, Fernando de Almeida Martins, Wãnderson de Oliveira Assis	IMT	mar/2026: Prof. Wãnderson; Prof. Sérgio	2020
24	Safety	C	C	Inovation in Electrical Instalations Design	CP-IMT, Electrical Engineering	Alessandro de Oliveira Santos	IMT	mar/2026: Prof. Wãnderson; Prof. Sérgio	2020
25	Sustainability	A	A	Renewable energy - Solar Energy	CP-IMT, Electrical Engineering, Computer Engineering	Edval Delboni, Fernando de Almeida Martins	IMT	mar/2026: Prof. Wãnderson; Prof. Sérgio; Prof. Ângelo Zanini	2020
26	Sustainability	A	A, B, C, D	Internet of things (IoT), including Smart Campus, Smart Parking and Smart Cities	Electrical Engineering, Computer Engineering	Alessandra Dutra Coelho, Fernando de Almeida Martins, Wãnderson de Oliveira Assis	IMT, CP-IMT	mar/2026: Prof. Wãnderson; Prof. Sérgio	2020
27	Safety	C	A, B, C, D	Technological Applications in Precision Agriculture, biomedical engineering and process control.	Electrical Engineering, Computer Engineering	Alessandra Dutra Coelho, Fernando de Almeida Martins, Wãnderson de Oliveira Assis	IMT	mar/2026: Prof. Wãnderson; Prof. Sérgio	2020
28	Joy of Living	D	D	Development of Scientific Instruments and Software for Earth-based, atmospheric or space-flight systems.	Electronics Engineering, Computer Engineering, Mechanical Engineering	Roberto Bertoldo Menezes, Vanderlei Cunha Parro	IMT, FAPESP, GMTO, ESA	mar/2026: Prof. Wãnderson; Prof. Sérgio	2020
29	Safety	C	C	Chemical and Biochemical Processes - Microwave applications - Microwave heating and power equipment	Electrical Engineering, Chemical Engineering	Edmilson Renato de Castro, Eduardo Victor dos Santos Pouzada	IMT, FAPESP	mar/2026: Prof. Sérgio, Profa. Roberta	2024
31	Sustainability	A	A, B	Recycling processes: polyester-fiberglass composites; PET for 3D printing; printed circuit-boards for extracting metallic nanomaterials	Mechanical Engineering	Viviane Tavares de Moraes	IMT, Fapesp, USP	mar/26: João Brasil	2020
32	Sustainability	A	A,C	Development of Superhydrofobic materials for safety and cleaning-water use reduction	Mechanical Engineering	Viviane Tavares de Moraes	IMT	mar/26: João Brasil	2020
33	Sustainability	A	A, B	Environmental Impact of A/C and Refrigeration systems gases	Mechanical Engineering	Rafael Hauckewitz Todaro	IMT, EPUSP, Danfoss	mar/26: João Brasil	2020
34	Sustainability	A	A	Energy Consumption from A/C and Refrigeration systems	Mechanical Engineering	Rafael Hauckewitz Todaro	IMT, EPUSP, Daikin	mar/26: João Brasil	2020
35	Sustainability	A	A	Renewable energy - Hydropower project infrastructure analysis and environmental impact mitigation	Civil Engineering, Mechanical Engineering, Computer Engineering	João de Sá Brasil Lima	IMT	mar/2026: Prof. João Brasil; Prof. Pedro Lyra	2021
37	Sustainability	A	A	Reutilization of solid waste from construction sites	Civil Engineering	Rafael Ribeiro Plácido	IMT	mar/2026: Prof. Pedro Lyra	2023
39	Sustainability	A	A, D	Renewable Energy - Water-heating through solar energy	Mechanical Engineering	Bruno Galleli Chiaregatti, João de Sá Brasil Lima	IMT	mar/2026, Prof. João Brasil	2020
40	Sustainability	A	A, B	Environmental Impact of GHG (Green-House Gas) Emissions	Mechanical Engineering	Joseph Youssif Saab Junior	IMT	mar/2026: Prof. João Brasil	2021
42	Sustainability	A	A, D	Civil Engineering Materials	Civil Engineering	Rafael Ribeiro Plácido	IMT	mar/2026: Prof. Pedro Lyra	2020

44	Safety	C	A, C, D	Manufacturing Automation and Intelligent Productive Systems: Integration of technologies for industry 4.0.	CP-IMT, Mechanical Engineering, Electronics Engineering, Industrial Engineering (Engenharia de Produção), Control and Automation Engineering.	Anderson Harayashiki Moreira, Andressa Corrente Martins, Jorge Kawamura, Caio Jorge Gamarra e Nelson Wilson Paschoalinato	IMT	mar/25: Prof. Eduardo Mikio	2020
45	Safety	C	C, D	Smart factory: Integration, connection and data exchange in manufacturing technologies for automation and management of the industrial environment.	CP-IMT, Control and Automation Engineering, Industrial Engineering (Engenharia de Produção)	Anderson Harayashiki Moreira, Andressa Corrente Martins, Aparecido Roberley Borghi, Jorge Kawamura, Caio Jorge Gamarra e Nelson Wilson Paschoalinato	IMT, Mitsubishi Electric Brazil	mar/25: Prof. Eduardo Mikio; mar/26: Prof. David Penof	2020
46	Safety	C	C, D	Autonomous Mobile Robots Development	Control and Automation Engineering, Computer Engineering	Anderson Harayashiki Moreira, Andressa Corrente Martins, Eduardo Lobo Lustosa Cabral, Fernando Silveira Madani	IMT	mar/25: Prof. Eduardo Mikio	2020
47	Safety	C	B, C, D	Service Bot: Development of service robots for human interaction.	Electronics Engineering, Control and Automation Engineering, Computer Engineering	Alexandre Harayashiki Moreira, Anderson Harayashiki Moreira, Andressa Corrente Martins, Eduardo Lobo Lustosa Cabral	IMT	mar/25: Prof. Eduardo Mikio	2021
48	Safety	C	A, B, C, D	Autonomous Shuttle: Development of an electric autonomous vehicle for last mile logistics.	Control and Automation Engineering, Research Group on Intelligent Mechatronic Systems and Robotics	Alexandre Harayashiki Moreira, Eduardo Lobo Lustosa Cabral	IMT, Translift sistemas de movimentação e armazenamento Ltda, SCANIA	mar/25: Prof. Eduardo Mikio	2020
49	Sustainability	A	A, D	Design and crafts: Natural fiber packaging. Social design in collaboration with craftsmanship community	Design Program	Agda Regina de Carvalho, José Carlos Carreira	IMT	mar/25: Prof. Everaldo	2021
52	Sustainability	A	A, C, D	Animal food level monitoring and delivery logistics	CP-IMT, Electrical and Electronics Engineering	Fernando de Almeida Martins	IMT	mar/26: Prof. Sérgio	2022
53	Sustainability	A	A, D	Jaguar SAT	CP-IMT, Electrical and Electronics Engineering	Fernando de Almeida Martins	IMT	mar/26: Prof. Sérgio	2022
54	Sustainability	A	A, D	Integrated biosystems for effluent treatment	Industrial Engineering (Engenharia de Produção)	Gabriela de Sá Leitão Mello, Joyce Zampirolli	IMT	mar/26: Prof. David/Prof. Afonso	2022
55	Sustainability	A	A	Circular Economy	Industrial Engineering (Engenharia de Produção)	Carlos Alberto Di Augustini, Gabriela de Sá Leitão Mello, Joyce Zampirolli	IMT	mar/26: Prof. David/Prof. Afonso	2022
56	Sustainability	A	A	Climate Risk Impact Assessment	Industrial Engineering (Engenharia de Produção)	Carlos Alberto Di Augustini, Gabriela de Sá Leitão Mello, Joyce Zampirolli	IMT	mar/26: Prof. David/Prof. Afonso	2022
57	Sustainability	A	A	Modeling and analysis of reverse logistics	Industrial Engineering (Engenharia de Produção)	Joyce Zampirolli	IMT	mar/26: Prof. David/Prof. Afonso	2022
58	Health	B	B, D	Identifying challenges in humanitarian logistics	Industrial Engineering (Engenharia de Produção)	Joyce Zampirolli	IMT	mar/26: Prof. David/Prof. Afonso	2022
59	Sustainability	A	A, C	Sustainability strategies for city logistics and Supply Chain Logistics	Industrial Engineering (Engenharia de Produção)	Joyce Zampirolli	IMT	mar/26: Prof. David/Prof. Afonso	2022
60	Sustainability	A	A	Circular Economy for Packaging materials	Industrial Engineering (Engenharia de Produção)	Afonso Carlos Braga, Aparecido Roberley Borghi	IMT	mar/26: Prof. David/Prof. Afonso	2022
61	Sustainability	A	A	The role of Reverse Logistic in a National Solid Waste Program.	Industrial Engineering (Engenharia de Produção)	Aparecido Roberley Borghi	IMT	mar/26: Prof. David/Prof. Afonso	2022
62	Sustainability	A	A	Food Waste Reduction: From production to consumption throughout the value chain.	Industrial Engineering (Engenharia de Produção)	Aparecido Roberley Borghi	IMT	mar/26: Prof. David/Prof. Afonso	2022
63	Sustainability	A	A	To support SMEs (Small and medium-sized enterprises) in developing more sustainable production's procedures.	Industrial Engineering (Engenharia de Produção)	Carlos Alberto Di Augustini, David Garcia Penof	IMT	mar/26: Prof. David/Prof. Afonso	2022
64	Sustainability	A	A	Tubo de Ranque-Hilsch. Estudo da eficiência via impressão 3D/teste e simulação CFD.	Mechanical Engineering	Joseph Saab	IMT	mar/26: João Brasil	2022
65	Joy of Living	D	D	Human-Powered Aircraft: designing an aircraft to fly exclusively relying on human power.	Mechanical Engineering	Joseph Youssef Saab Junior	IMT, Flyer Indústria Aeronáutica, Braskem.	mar/26: Prof. João Brasil	2022
66	Health	B	B	Fighting Dengue and Chikungunya Fevers: adapting drones for identifying water puddles and taking preventive measures.	Mechanical Engineering, Control and Automation Engineering, Computer Engineering.	Joseph Youssef Saab Junior	IMT	mar/2026: Prof. João Brasil	2022
67	Joy of Living	D	D	Improving the existing system for collecting atmospheric samples aboard the IMT Stratospheric Balloon.	Mechanical Engineering	Joseph Youssef Saab Junior	IMT	mar/2026: Prof. João Brasil	2022
68	Joy of Living	D	D	Numerical Modelling of the heat transfer on a Cubsat in LEO (Low-Earth Orbit).	CP-IMT, Mechanical Engineering	Joseph Youssef Saab Junior; Fernando de Almeida Martins	IMT	mar/26: João Brasil e Sergio Ribeiro	2022
69	Sustainability	A	A	Developing a termo-acoustic insulating material from sugarcane or coconut fiber rejects.	Mechanical Engineering	Joseph Youssef Saab Junior	IMT	mar/2026: Prof. João Brasil	2022
70	Joy of Living	D	D	Responsive Design and Internet of Things: graphical experiments considering the user experience in IoT.	Design Program	Ana Paula Scabello Mello, Everaldo Pereira, Murilo Marcos Orefice	IMT	mar/25: Prof. Everaldo	2022
71	Sustainability	A	A	Biodesign and biomimetics applied to research and product development	Design Program	Agda Regina de Carvalho	IMT	mar/25: Prof. Everaldo	2022
72	Joy of Living	D	D	Design and user experience	Design Program	Ana Paula Scabello Mello	IMT	mar/25: Prof. Everaldo	2022
73	Sustainability	A	A	Development of a special mesh cutting kit to release whales from fishing mesh	Mechanical Engineering	Éd Claudio Bordinassi	IMT and Jubarte NGO	mar/2026: Prof. João Brasil	2022
74	Sustainability	A	A, B	Study of Food Industry By-Products	Food Engineering	Tatiana Guinoza Matuda Masaoka	IMT	mar/25: Prof. Eliana	2023

76	Sustainability	A	A	Renewable Energy - Electrical power generation via solid oxide fuel cells coupled to ethanol fuel reformers	Chemical Engineering, Mechanical Engineering	Armando Zanone, Clayton Barcelos Zabeu	IMT, SENAI, REPSOL	mar/2026: Prof. João Brasil	2023
77	Sustainability	A	A	Renewable Energy - Characterization of ethanol sprays produced by ultra-high pressure diesel systems	Mechanical Engineering	Rafael Hauckewitz Todaro	IMT, EPUSP	mar/2026: Prof. João Brasil	2023
78	Joy of Living	D	D	Competency-based approaches applied in a personalized learning context	Mechanical Engineering, Computer Engineering	Milkes Yone Alvarenga, Rafael Hauckewitz Todaro	IMT	mar/2026: Prof. João Brasil; Prof. Ângelo Zanini	2023
79	Joy of Living	D	D	Bioengineering - Study of blood flow in biological structures using numerical simulation (Blood flow in aneurysms, strokes, clot formation)	Mechanical Engineering	João de Sá Brasil Lima	IMT	mar/26: João Brasil	2020
80	Safety	C	A, B	International Relations and International Business Management: Conflict Observatory	International Relationship	Rodrigo Fernando Gallo, Leticia Rizzotti Lima, Flavia Loss de Araújo	IMT	Ago/2023: Prof. Ricardo Balistiero	2023
82	Health	B	A	Technological potential for 3D print food ink	Food Engineering	Cynthia Jurkiewicz Kunigk, Tatiana Beatris Tribess, Tatiana Guinoza Matuda Masaoka	IMT	mar/2025: Prof. Eliana Paula Ribeiro	2023
83	Sustainability	A	A, B, D	Computational Modeling, Data Analysis and Artificial Intelligence and Applications	Computer Engineering	Ângelo Sebastião Zanini, Milkes Yone Alvarenga	IMT	mar/2025: Prof. Ângelo Zanini	2024
84	Health	B	A	Study of the technological feasibility of applying vegetable residues and ingredients in analogues of meat or dairy products	Food Engineering	Cynthia Jurkiewicz Kunigk, Tatiana Beatris Tribess, Tatiana Guinoza Matuda Masaoka	IMT	mar/2025: Prof. Eliana Paula Ribeiro	2024
85	Joy of Living	D	D	The digital 3D model and its impacts on human perception	Design Program	Henrique Sobral	IMT	mar/25: Prof. Everaldo	2025
86	Sustainability	A	A, D	Wet- Carbonated Cementitious Materials for CO ₂ Sequestration	Civil Engineering	Matheus Zanovello	IMT	mar/26: Prof. Pedro Lyra	2025
87	Sustainability	D	A, D	Geospatial and geotechnical analyses for sustainable urban solid waste management	Civil Engineering	Mariana Barbosa Juarez	IMT	mar/2026: Prof. Pedro Lyra	2025
88	Sustainability	A	A	Renewable Energy – Decarbonization in Power generation sector – Substitution of diesel and heavy fuel oil by biomethane and hydrogen. Case study: conversion of a large-bore HFO engine to natural gas and hydrogen	Mechanical Engineering	Clayton Barcelos Zabeu	Eneva (ANEEL)	mar/2026: Prof. João Brasil	2025
89	Joy of Living	D	D	Community-Centered Extension Projects	Extension Center [Núcleo de Extensão] - IMT	Cristiano Cordeiro Cruz	IMT	out/2025: Prof. Cristiano Cruz	2025

FAPESP	São Paulo State Research-Support Foundation
GMTO	Giant Magellan Telescope Office (Australian, Brazilian, Korean and American Joint-Venture)
ESA	European Space Agency
IMT	The IMT non-profit parent organization grant funds twice annually for internal and external (non-IMT students) approved researches.
CP-IMT	IMT Research Center
EPUSP	São Paulo State Polytechnic School of Engineering
Danfoss	Danfoss HVAC Corporation
Daikin	Daikin HVAC Corporation
Daimon	An energy sector Corporation
Thales	Na Aerospace, Defense and Security French Company
USCS	São Caetano City University
EMBRAPA	Empresa Brasileira de Pesquisa Agropecuária
ENEVA	An energy sector Corporation (https://www.eneva.com.br/en/)
N/N	Specific funding Not Necessary. Activities developed under the budget of the regular disciplines.