

# STEM Education for sustainability -- The IITMZ experience

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Campus launch by President of Zanzibar, HE, Dr Hussein Ali  
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## IIT Madras- Zanzibar: An aspirational campus of IIT Madras for Africa



***IIT Madras: a top-ranked, centrally funded Institution in India with over 65 years' standing in world-class engineering education and research***

Across 18 departments, IIT Madras offers 50+ degree programs for a diverse group of students

Research programs encompass blue-sky cutting-edge areas and impactful technology development

Innovation and entrepreneurship is central, with 400 startups with a valuation of \$4billion coming out of IITM Research Park

***IITM Zanzibar: leveraging the unique strengths and experience of IIT Madras for Zanzibar and the African region. to --***  
***-- train international student cohorts for leadership roles in S&T sector***  
***-- drive research excellence in areas of global and local relevance***  
***-- upskill professionals through intensive short-term courses***  
***-- drive entrepreneurship and innovation through student-faculty teams working hand-in-hand with Government and Corporates***



# Some reflections on the theme of the meeting...

***Inclusivity, Technology, Resilience: What do they mean for an educational institution?***

- The future generations will see the workplace as a melting pot in terms of genders, cultures, abilities and viewpoints – need to be trained in teamwork, in ‘getting along’, and for careers in an interconnected, interdependent world..
- New technologies such as AI and Genetic engineering are changing the world at a frenetic pace; how do we prepare a workforce for a future that we cannot foretell? And for several possible shifts in career path over a professional life?
- The butterfly effect -- need to appreciate how regional imperatives impact global challenges such as sustainable development goals, energy mix, climate,....
- The changing nature of education with the information revolution – need to redefine the role of teachers as facilitators and mentors in the learning process..
- Need to incorporate new technologies in the teaching/learning process, to accelerate learning, customize it and make it more effective.

# Degree programs at IITM Zanzibar



## Bachelor of Science in Data Science & AI

- 3<sup>rd</sup> batch to be onboarded in 2025



## Master of Technology in DS & AI

- 1<sup>st</sup> batch to graduate in 2025
- Nearly fully placed



## Proposed for 2025: Bachelor of Science in Chemical Process Engineering

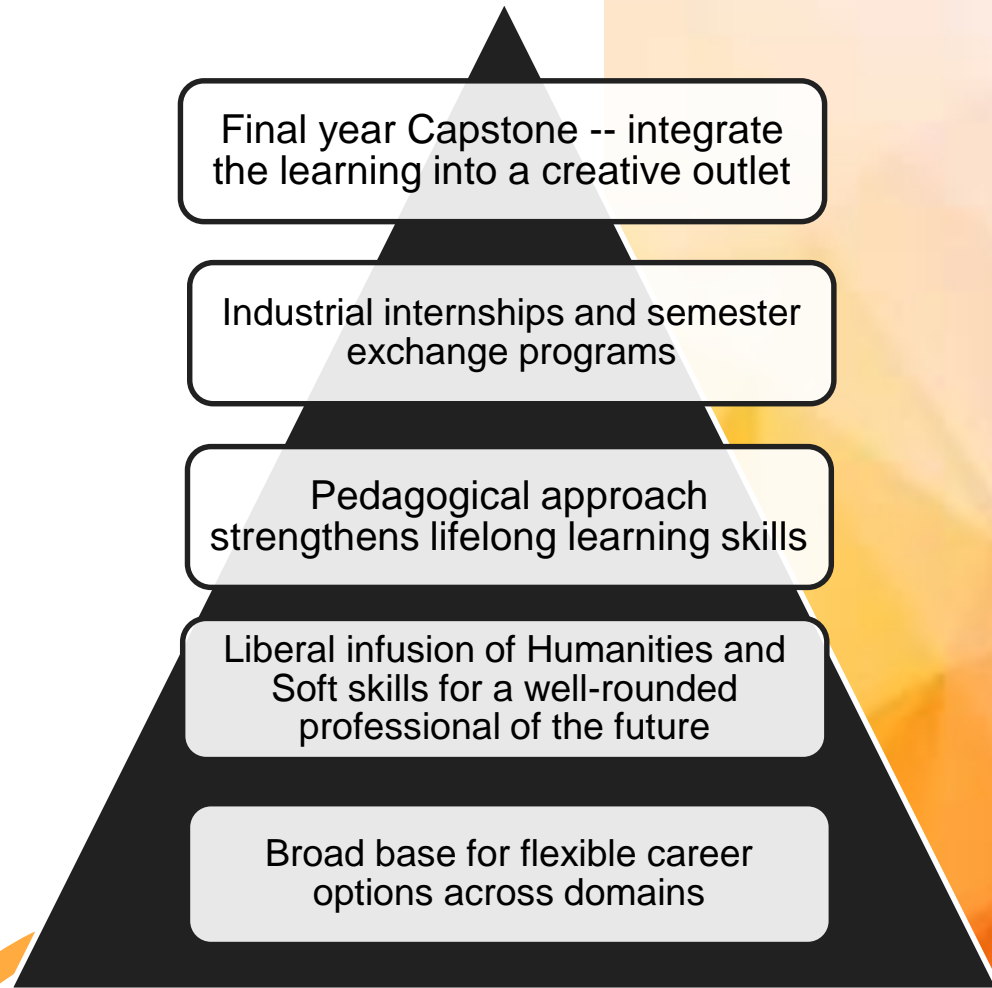


## Master of Technology in Ocean structures

- 2<sup>nd</sup> batch to be onboarded in 2025

# Architecting programs for sustainability and future relevance

## ***BS Programs***



## ***MTech Programs***

- Advanced courses for breadth and depth
- Year-long thesis: Research experience; Innovation and Entrepreneurial possibilities
- Opportunities for Industrial internships for field experience
- Onboarding corporates for an overall enriching educational and research experience
- Opportunities also for one semester abroad in exchange programs with partner universities.

## ***BS programs***

- Third cohort to be onboarded for BS (DS &AI) this year; possibly also the first batch for Chemical process Engineering.
- Apart from resident faculty, students have been taught by eminent Visiting Faculty from IIT Madras and IIT Bombay. More visitors from international universities planned.
- Visitors engage in wide-ranging discussions with faculty and students, give Guest seminars on their research (which are open events).

## ***MTech programs***

- First cohort in DS &AI to graduate this year; already nearly fully placed.
- The Ocean structures cohort to spend time in IIT Madras main campus.
- Thesis topics include both homegrown topics as well as topics jointly conceived with Industrial participation.
- MTech batches have also benefitted from the Visitors' program.



# IITMZ: Skilling programs and outreach

- Short term courses on topics such as Blockchain, Applications of Data Science in AI in focus areas, Advances in concrete technology etc, with in-house plus visiting faculty.
- Guest lectures by renowned experts on applications of DSAI to businesses, to governance, to diplomacy etc., including to the Tanzanian Parliament, CEO Round Table, African diplomats, etc.
- Visiting delegations to explore collaborations from NMAIST Arusha, African School of Business, FICCI, Airtel foundation, Zantel etc; some collaborations already in place (e.g., CPHK Pemba)
- Collaborative programs with Universities in the middle east, UK, Australia, India etc.
- Fund-raising efforts with philanthropic foundations to see that quality students are not deprived of quality education because of a lack of means
- Awareness initiatives: ‘Spoken tutorial project’ of IITBombay and Govt of India brought to Zanzibar to enable self learning in digital literacy in the community, among school teachers, etc.
- Activities such as Industry Day bring Industry face to face with student activities
- Cultural and sports activities make for intercultural bonding and community engagement

# IITMZ: Vignettes of student activities

- Several pieces of (grad) student + faculty research have featured in prestigious international conferences.
- A MTech student team secured III place in an international competition conducted by Google research as part of a top AI conference in Philadelphia, USA.
- An app that can potentially integrate several forms of public transport (bajaji's, dala-dala, taxis etc) on one platform has been developed with key participation by a second year Zanzibari student.
- Monitoring of pollution levels using mobile and stationary sensors in progress to track pollution and its movement in Zanzibar; being extended to Pemba.
- A program of 3-minute talks on tech ideas by students was attended by several industry captains and several ideas caught their attention.
- An entrepreneurship cell has been started in IITMZ Students participated in an event in IIT Madras main campus and did well enough to earn an honorable mention.



# Summing up...

- In its short existence, IITMZ's academic programs have taken root well and have started bearing flowers and fruits.
- With BS students coming up to the stage of industrial internships and semester exchange programs, a wider recognition by the profession and other international programs, of the skills cultivated, is in the offing.
- A novel program in Chemical Process Engineering that distils the essence of several successful programs and lets the student specialize in concentrations such as water, energy, environment and sustainable processing, is ready for launch.
- Research programs are getting stabilized; a PhD program is already advertised and first intake will happen soon.
- A vibrant visitors' program gives the students and faculty wider exposure and broadens their horizons.
- Students free to explore their creative side, and this is already yielding dividends.

*... and miles to go before I sleep*

# Thank you!

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