MA Marine

SHM- Enabler of 3R
(Risk, Resilience and Reliability)

ONLINE

22nd – 24th September 2026

ABOUT THE COURSE

This course offers a solid foundation in Structural Health Monitoring (SHM), emphasizing its role in risk management, reliability, and resilience (the "3R" framework). Aimed at infrastructure professionals, it blends theory with practical tools for assessing structural performance and safety. Key topics include risk and reliability quantification, direct and indirect SHM methods for damage detection, and data-driven decision-making across an asset's lifecycle. The course also uses case studies to illustrate real-world applications and ongoing challenges in SHM.

The course also explores data acquisition strategies and the vital role of sensing technologies. Attendees will gain a working understanding of sensor types, selection criteria, and deployment practices critical to any successful SHM implementation. Building on this, lectures also include a forward-looking examination of artificial intelligence for predictive and adaptive infrastructure monitoring. Specialised lectures address computer vision applications for automated damage detection, as well as deep learning methods for early-age concrete strength monitoring using smart sensors and AI algorithms.

This course is ideal for structural inspection engineers, asset managers, and researchers seeking to understand and implement state-of-the-art SHM strategies.

WHO SHOULD ATTEND?

Engineers and scientists involved in the design, operation and assessment of structural health monitoring (SHM) of engineering structures.

COST

The registration fee of the workshop is **£695 plus VAT** (VAT UK only) which includes course notes.

PAYMENT

We will send you an invoice for the course fee after you have registered on the course. The payment can be made via bank transfer or online credit/debit card payment. If you need any further information, please contact us by email: **info@mam.engineer**

PROGRAMME

Time (GMT)	Title	Lecturer
Day 1: Tuesday, 22nd September 2026		
8:00 - 9:30	**Lecture-1** **Introduction to SHM and the 3R (risk, resilience and reliability) / SHM as enabler of 3R**	Dr. Donya Hajializadeh
	Break	
09:45 - 11:15	**Lecture-2** **Risk and Reliability quantification**	Dr. Donya Hajializadeh
	Break	
11:45 - 13:15	**Lecture-3** **SHM methodologies and overview of direct and indirect approaches**	Dr. Donya Hajializadeh
	Break	
13:30 - 15:00	**Lecture-4** **SHM and Decision Making including case studies and future trends.**	Dr. Donya Hajializadeh

Time (GMT)	Title	Lecturer
Day 2: Wednesday, 23rd September 2026		
8:00 - 9:30	**Lecture-5** **Advanced Computer Vision Techniques for Structural Health Monitoring (SHM)**	Dr. T Jothi Saravanan
	Break	
09:45 - 11:15	**Lecture-6** **Deep Learning Techniques for Monitoring Early-Age Concrete Strength**	Dr. T Jothi Saravanan
	Break	
11:45 - 13:15	**Lecture-7** **Structural Health Monitoring: Data Acquisition and the Role of Sensing**	Dr. Jiping Bai
	Break	
13:30 - 15:00	**Lecture-8** **Machine Learning in Structural Health Monitoring**	Dr. Jiping Bai

Time (GMT)	Title	Lecturer
Day 3: Thursday, 24th September 2026		
8:00 - 9:30	**Lecture-09 Structural Health Monitoring Systems: Design and Implementation**	Dr.-Ing. Daniel Colmenares
	Break	
09:45 - 11:15	**Lecture-10 Structural Health Monitoring for Bridges: Real-World Case Studies**	Dr.-Ing. Daniel Colmenares

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Dr. Donya Hajializadeh

Dr. Donya Hajializadeh is a chartered engineer and senior lecturer at the University of Surrey, with more than a decade of experience in industry- focused research in the areas of structure and

Infrastructure health monitoring, application of machine learning approaches in data- driven damage identification systems and risk, reliability and resilience-focused decision – making in transport infrastructure and systems. As project lead, co-investigator, technical lead / co-lead, and principal / co- supervisor, she has worked and successfully delivered over 50 commercial and research projects on time and on budget. She is an active member of several professional bodies, including the Institution of Civil Engineers, the Institution of Structural Engineers, the Institution of Engineers of Ireland and the Women's Engineering Society.

Dr. Jiping Bai

Dr. Jiping Bai is an Associate Professor in civil engineering at University of South Wales, UK. He has focused his research on sustainable construction materials, structural analysis and design to Eurocodes including steel and concrete structures. With over 20 years of experience in lecturing, consulting, and researching in the field of sustainable development and structural engineering, Jiping has specialised in sustainable construction via waste utilisation and recycling practices, analysis of structural durability through modelling approaches, and the evaluation and optimisation of quality standards. His research endeavours investigate the intricate dynamics among structural materials, their performance within structural systems, and their interactions within the surrounding environment.

Passionate about bridging academic research with industry practice, particularly through the integration of advanced technologies into engineering design and assessment, more recently, Dr Bai has expanded into developing intelligent systems that incorporate machine learning for structural inspection and health monitoring, aiming to enhance the performance and lifespan of structures for a more sustainable and resilient built environment.

Dr. T Jothi Saravanan

Dr. T. Jothi Saravanan is an Assistant Professor at the Department of Civil Engineering, School of Infrastructure, Indian Institute of Technology Bhubaneswar, Odisha, INDIA. He obtained doctoral degree in Civil Engineering from The University of Tokyo, Japan in 2018 with Thesis Adjudged Excellent. Following his doctorate, Dr. Jothi Saravanan worked as JSPS Postdoctoral Fellow at the Institute of Advanced Sciences, Yokohama National University, Japan under Japan Society for the Promotion of Science. This fellowship program aims to foster international scientific collaboration in Japan. The sponsored research project focuses on computer vision-based structure monitoring and was funded with a 2.4-million-yen grant-in-aid. Dr. Jothi Saravanan is a recipient of various fellowships / scholarships namely, Quick Recruitment Scientist (Fellow) by the CSIR, India in 2014- 15; Monbukagakusho: MEXT Scholarship by Govt. of Japan in 2015-2018; Visiting Scholar to University of Cambridge, UK in 2016.

Promising Young Structural Engineer Award- IAStructE National Awards 2023. Presently, Dr. Jothi has several ongoing R&D and sponsored industry projects. Dr. Jothi Saravanan's research focuses on structural health monitoring, structural dynamics, computer vision, deep learning, smart materials, UAV based visual inspection, augmented reality, digital twin, and infrastructure condition assessment. He has authored more than 12 book chapters, 45 journal papers, 42 conference papers and 2 technical reports. He serves on the Editorial Board of Scientific Reports (Springer Nature) and reviewer for various journals.

Dr.- Ing. Daniel Colmenares

Dr.-Ing. Daniel Colmenares is a Structural & Bridge Engineer, Business Developer, and SHM specialist with international experience across Sweden, Italy, Germany, Norway, and Finland. He holds a PhD in Bridge Dynamics from the Royal Institute of Technology (KTH) in Stockholm, where his research focused on bridge dynamics, structural health monitoring, experimental modal analysis, vibration mitigation, and finite element modelling of railway and pedestrian bridges. Currently working at Dewesoft AB as Regional Business Developer for the Nordic region, Daniel leads the strategy and implementation of advanced monitoring solutions for bridges, buildings, and wind turbines. His professional background also includes structural engineering roles at AFRY, research at KTH Royal Institute of Technology, and international consulting experience in bridge assessment, retrofitting, and structural dynamics. Daniel combines academic and industry expertise, delivering webinars, technical training, and applied engineering solutions in Structural Health Monitoring (SHM), bridge dynamics, and vibration control projects. With experience in advanced FEM, instrumentation, data analysis, and condition assessment, he is passionate about helping engineers and infrastructure professionals adopt modern SHM technologies for safer and smarter infrastructure systems.