

SCHOOL OF MECHANICAL ENGINEERING, USM

PROFESSIONAL DIPLOMA IN MECHANICAL STRUCTURE INTEGRITY AND INSPECTION WITH LEAN MANAGEMENT (PDMSI-LM)

Proposal to:



PENANG PORT SDN. BHD





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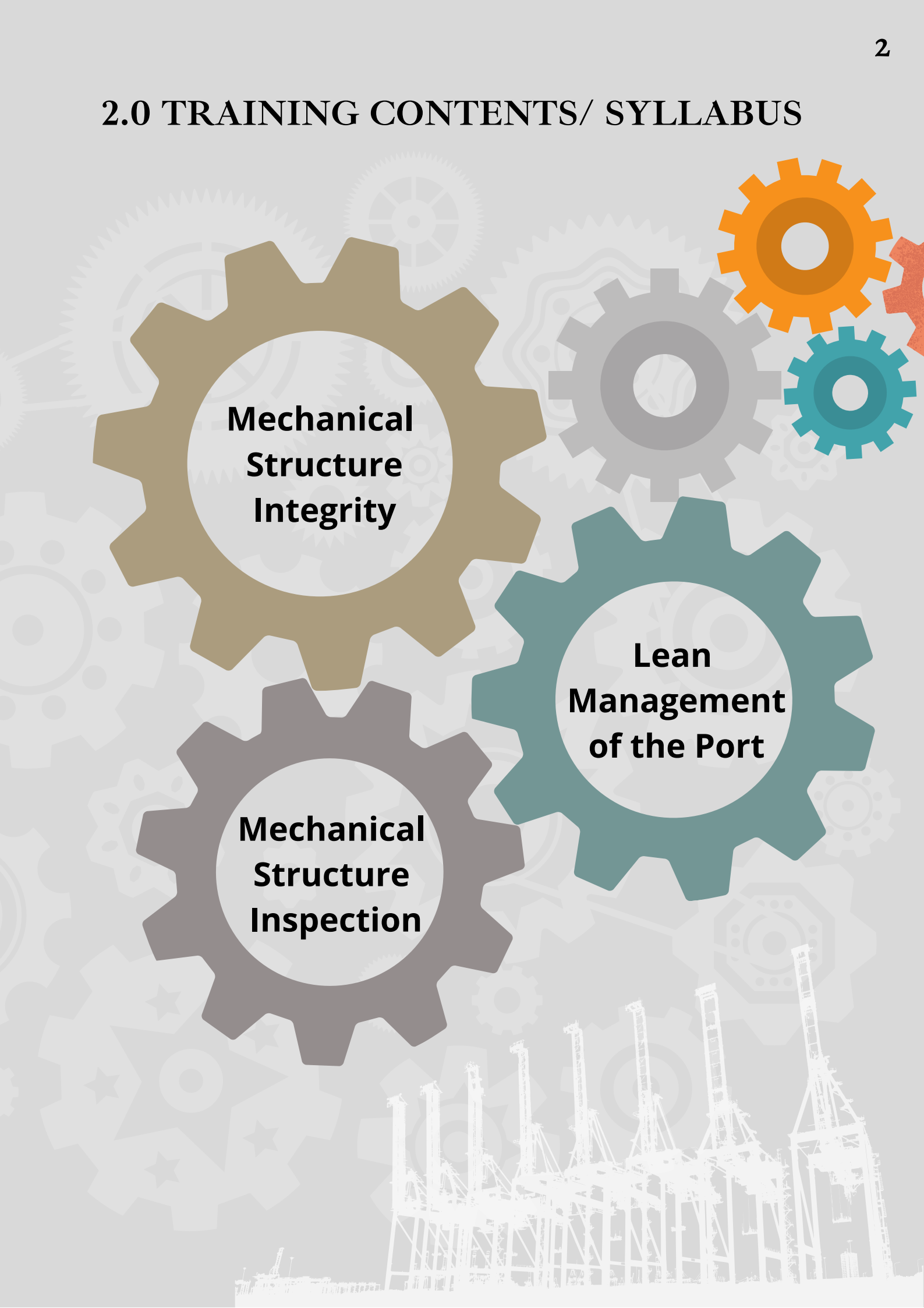
1.0 INTRODUCTION SCHOOL OF MECHANICAL ENGINEERING, USM

The School of Mechanical Engineering was established on the first day of 1989. In April 1990, the Engineering Campus had completed its moves to USM Perak Branch (USMKCP) campus. In 1997, the government decided to transfer USMKCP back to Penang, then began transferring in stages in 2000 to the current USM Engineering Campus in Seri Ampangan, Nibong Tebal, Penang. The new Engineering Campus begins full operations in May 2001.

We offer a **MULTIDISCIPLINARY ENGINEERING** course inclusive of Mechanical, Electrical, Electronics and Material Engineering. The nontechnical subjects that are equally important to an Engineer such as Management, Language, Computer, Accounting and Engineer in Society are also included as part of the overall educational program. Our students are provided with Mathematical, Analytical, and Computing abilities with adequate soft skills that underpin modern engineering practice. Moreover, we provide our students with hands-on experience while encouraging the creative skill and problem-solving strategies that are so important for a good engineer.

We strive to produce engineering graduates with high expertise, creativity, and having the essential social-capital and competent in following the rapid technology developments in the engineering industry or other relevant industries.

2.0 TRAINING CONTENTS/ SYLLABUS



**Mechanical
Structure
Integrity**

**Lean
Management
of the Port**

**Mechanical
Structure
Inspection**

No	Course Code	Course Description	Group / Shift	Date	Time	Instructor	Coordinator
Mechanical Structure Integrity							
1	PDMSI-LM 001	Structure Vibration	1 - 4	TBC	9am – 5 pm	Dr. Ahmad Zhafran Ahmad Mazlan	En. Muhammad Azman Miskam / En. Norijas Abd Aziz
2	PDMSI-LM 002	Structure Materials & Welding	1 - 4	TBC	9 am – 5 pm	AP Ir. Dr. Ahmad Baharuddin Abdullah	En. Muhammad Azman Miskam / En. Norijas Abd Aziz
3	PDMSI-LM 003	Structure Wear & Friction	1 - 4	TBC	9 am – 5 pm	Dr. Nurul Farhana Mohd Yusof	En. Muhammad Azman Miskam / En. Norijas Abd Aziz
4	PDMSI-LM 004	Structure Fatigue & Failure	1 - 4	TBC	9 am – 5pm	AP Dr. Abdullah Aziz Saad	En. Muhammad Azman Miskam / En. Norijas Abd Aziz
Mechanical Structure Inspection							
5	PDMSI-LM 005	Image Processing Method 1	1 - 4	TBC	9 am – 5 pm	Ir. Dr. Yen Kin Sam	En. Muhammad Azman Miskam / En. Mohd Idzuan Said
6	PDMSI-LM 006	Image Processing Method 2	1 - 4	TBC	9 am – 5 pm	Dr. Norwahida Yusoff	En. Muhammad Azman Miskam / En. Mohd Idzuan Said
7	PDMSI-LM 007	FEM Analysis (Structure)	1 - 4	TBC	9 am – 5 pm	Dr. Muhammad Fauzinizam Razali	En. Muhammad Azman Miskam / En. Mohd Idzuan Said
8	PDMSI-LM 008	FEM Analysis (Fluid)	1 - 4	TBC	9 am – 5 pm	AP Dr. Mohamad Aizat Abas	En. Muhammad Azman Miskam / En. Mohd Idzuan Said
Lean Management of the Port							
9	PDMSI-LM 009	Port Schedule Plan & Control	1 - 4	TBC	9 am – 5 pm	Ts. Dr. Muhammad Hafiz Hassan	En. Muhammad Azman Miskam / En. Kamarul Zaman Mohd Razak
10	PDMSI-LM 010	Port Maintenance & Management	1 - 4	TBC	9 am – 5 pm	Dr. Hasnida Ab Samat	En. Muhammad Azman Miskam / En. Kamarul Zaman Mohd Razak
11	PDMSI-LM 011	Lean Case Study for Penang Port (Visual Lean)	1 - 4	TBC	9 am – 5 pm	Dr. Nur Amalina Muhammad	En. Muhammad Azman Miskam / En. Kamarul Zaman Mohd Razak
12	PDMSI-LM 012	Safety & Ergonomic for Penang Port Worker	1 - 4	TBC	9 am – 5 pm	Dr. Ramdziah Md Nasir	En. Muhammad Azman Miskam / En. Kamarul Zaman Mohd Razak

PROFESSIONAL DIPLOMA IN MECHANICAL STRUCTURE INTEGRITY AND INSPECTION WITH LEAN MANAGEMENT (PDMSI-LM)

Award



Professional Diploma in
Mechanical
Structure Integrity and
Inspection
With
Lean Management
(PDMSI-LM)



Duration

12 Months



Teaching and Learning

Each Module has
4 days (9 am - 5 pm)

Training slot based on
Industry Schedule

Suggested to have
15 - 20 pax
per day/session.



Total Modules

12 Modules



Assessment Strategy

Applied assessments
integrating theory and
practice through
Continuous and
Final assessments.

*Quizzes throughout
modules

*Presentation Activity
by Students

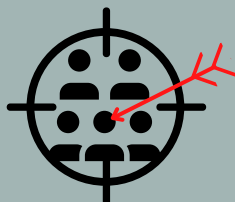
*Final Open book Test

COST



Cost per Module

RM 24,000.00
(RM 6,000.00 per day)



Target Audiences

1. Operators
2. Supervisors
3. Engineers
4. Managers



Entry Requirements

Certificate or
higher and a
minimum
of three
years of
working
experience.

3.0 MODULES

Mechanical Structure Integrity

1. Vibration
2. Materials & Welding
3. Wear & Friction
4. Fatigue and Failure

Mechanical Structure Inspection

1. Image Processing using 2 Different Methods
2. FEM Analysis for Structure Failure Based on Structure & Fluid

Lean Management of the Port

1. Planning
2. Maintenance
3. Management
4. Visual Inspection
5. Ergonomic & Safety



Teaching & Learning strategies

The program is designed for working adults having clearly defined goals and learning objectives. The teaching strategies recognize the value of the participant's knowledge and experience and relate the material with their past work experiences. This approach requires participants to be involved in the learning process by drawing upon their past work experiences and share their views on how to deal with real-life work issues and problems. They also will be encouraged to collaborate with classmates in developing effective solutions and apply whatever they have learnt from the modules into their current work environments. The learning environment encourages participants to be resources to each other and allow the learner to be autonomous and self-directing, focusing on hands-on activities.

Teaching & Learning Infrastructure and Preparedness

For theoretical class can be done in Penang Port or USM. For hands-on class, need to be conducted in USM

4.0 TRAINER PROFILE

AP Ir. Dr. Ahmad Baharuddin Abdullah	Dr. Ahmad Zhafran Bin Ahmad Mazlan	Dr. Nurul Farhana Mohd Yusof	AP Dr. Abdullah Aziz Saad
			
Academic Qualification: B.Eng., M.Sc. (USM), Ph.D. (UPM)	Academic Qualification: B.Eng. (Waseda, Japan), M.Sc., Ph.D. (USM)	Academic Qualification: B.Eng. (UTM), M.Sc., Ph.D. (USM)	Academic Qualification: B.Eng., M.Sc. (USM), Ph.D. (Nottingham, UK)
Area of Expertise: Sheet Metal Forming: Tool and Die Design; Wire Arc Additive Manufacturing; Friction Stir Welding	Area of Expertise: Active Vibration and Force Control, Piezoelectric Sensor, and Actuator, Structural Dynamic Modification, Dynamic and Control Modelling and Simulation	Area of Expertise: Tribology, Surface Wear and Friction, Finite Element Analysis of Surface Contact, Rolling Element Bearing Vibration and Condition Monitoring	Area of Expertise: Nonlinear Finite Element Analysis, Material Behavior Modelling (Plasticity, Creep, Fatigue), Analysis of Electronic Packaging

Ir. Dr. Yen Kin Sam	Dr. Norwahida Yusoff	Dr. Muhammad Fauzinizam Razali	AP Dr. Mohamad Aizat Abas
			
Academic Qualification: B.Eng., M.Sc., Ph.D. (USM)	Academic Qualification: B.Sc. (Case Western Reserve, USA), M.Sc. (UM), Ph.D. (USM)	Academic Qualification: B.Eng., M.Sc., Ph.D. (USM)	Academic Qualification: B.Eng. M.Eng. (Nottingham, UK), Ph.D. (USM)
Area of Expertise: Machine Vision, Pattern Recognition	Area of Expertise: Fracture Mechanics, Finite Element Analysis/Modeling, Stress Analysis, Biomechanics	Area of Expertise: Shape Memory Alloy, Finite Element Analysis, Material Characterization, Biomechanics in Orthodontics, Composite Structures	Area of Expertise: Fluid-Structure Interaction (FSI), Finite Element Method, Finite Volume Method, Lattice Boltzmann Method, Electronic Packaging, Artery Bifurcation Aneurysm Problems, Porous Medium Combustion

Ts. Dr. Mohammad Hafiz Hassan	Dr. Hasnida Ab Samat	Dr. Nur Amalina Muhammad	Dr. Ramdziah Md Nasir
			
Academic Qualification: B.Eng., M.Sc., Ph.D. (USM)	Academic Qualification: B.Eng., M.Sc., Ph.D. (USM)	Academic Qualification: B.Eng., M.Sc., Ph.D. (USM)	Academic Qualification: B.Sc. (Manchester, UK), M.Phil. (Sheffield, UK), Ph.D. (Multimedia University)
Area of Expertise: Advanced Composite Manufacturing, Advanced Composite Machining, Innovative Cutting Tools Design, Process Improvement & Optimization, Ballistic Application	Area of Expertise: Manufacturing System, Maintenance Management, Production Management, Project Management, Lean Six Sigma	Area of Expertise: Manufacturing System, Lean Six Sigma, Production Management, Knowledge Management	Area of Expertise: Tribology of Engineering and Biomedical Materials, Raman Spectroscopy, Manufacturing Engineering Materials

5.0 CONCLUSION

We believe that the proposed modules for the training are important for an organization to develop the skill sets of their employees. Through these modules, we hope to provide each participant with a solid mastery of mechanical design and machine vision with lean project management, and an in-depth understanding of how they can apply those skills in their everyday work.

6.0 CONTACTS

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