



Asset Management Masterclass





**Lead the future.
Expertly.**

Embrace your role as a leader of asset management within your organisation with confidence and clarity.

Pragma's transformative Asset Management Masterclass will unlock the power to drive strategic decisions with precision. Our seasoned facilitators will guide you through the intricate landscape of asset management, demystifying complex frameworks and concepts along the way.

Harness the collective wisdom of like-minded professionals on a journey of discovery, where you'll develop an asset management policy and implementation strategy, with coaching and mentoring support. Elevate your entire management team as you create alignment and a unified vision and roadmap for sustainable asset management improvement and success.

This programme sets the standard for asset management professionals offering a pathway to empowered leadership and organisational excellence.

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The Asset Management Masterclass is a practical and interactive training programme designed to enable senior managers in asset-intensive organisations to develop, implement and lead asset management initiatives.

By providing delegates with a holistic understanding of all the asset management elements and their interdependencies, and the associated best practices and key success factors, the programme enables senior managers to craft a compelling asset management vision and prioritised strategic plan, tailored to their organisational needs.

They will also gain insight into the potential value of an effective asset management system, that will achieve the objective of improved asset performance at lower risk and optimal costs. This programme will put senior managers in a solid position to justify and gain executive support for the asset management initiative.

The Asset Management Masterclass assists delegates with their preparation for the CAMA exam. It also provides delegates with the theoretical knowledge required to implement asset management in their organisations and application for the CSAM designation with the South African Asset Management Association (SAAMA).

Become part of the Pragma Academy alumni and continue to benefit from industry insight, best practice, networking and support.

Who should attend this course?

This programme is aimed at senior managers and specialists who are responsible to define, implement, lead and improve asset management in their organisations.

- Technical Directors
- Group Head of Engineering
- Engineering Managers
- Plant Managers
- Operational Managers
- Mine Managers
- Section Engineers
- Asset Managers
- Asset Management Specialists

The programme is delivered as public training with delegates from different companies and industries. However, it can also be delivered in-house to the management team, with the option of slightly customising the standard programme.



At the end of the programme, delegates will be able to

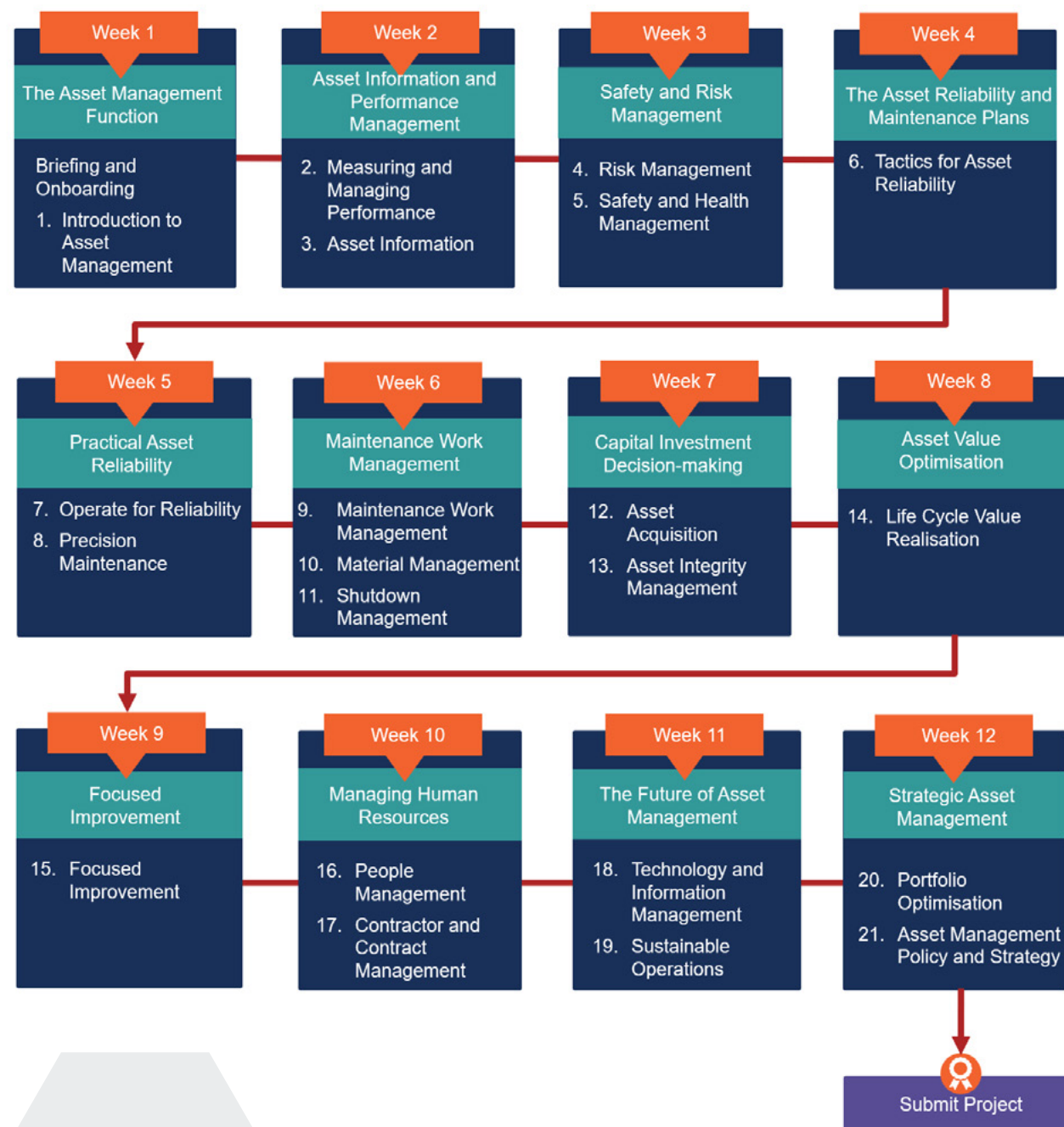
- Define asset management (AM), and its key principles and objectives according to ISO 55000
- Establish a multi-level AM scorecard to measure and manage the AM performance of the organisation
- Identify and assess key AM business risks and manage them effectively in line with ISO 31000
- Establish an effective asset reliability and health management function in the organisation
- Describe the process to develop asset tactics based on reliability centered maintenance principles
- Explain the benefits and considerations for implementing an Operate for Reliability programme
- Describe the best practices and responsibilities for effective maintenance work management
- Identify and motivate improvements to the material management function in the organisation
- Describe the objectives, activities and responsibilities to ensure maintenance readiness of new assets
- Quantify an asset's life cycle costs and the value of improvements to optimise asset life cycle decisions
- Establish an effective multi-tiered process and capability to solve AM problems in a structured way
- Define am staff's roles, competencies and reporting lines to ensure an effective AM organisation
- Improve the effective managing of AM contracts and contractors in the organisation
- Explain how the latest technology, information and environmental trends will influence AM in future
- Compile an AM policy as their organisation's statement of intent for all aspects of AM
- Assess the maturity of an organisation's AM and develop a strategic asset management plan (SAMP)



Programme Overview

The programme consists of 21 modules, covering all aspects of asset management, grouped together in 12 themes, delivered over 12 consecutive weeks, with a final week for the practical project.

AM Masterclass learning journey



Asset Management Masterclass

Overview of the modules

1 Introduction to Asset Management

This module provides the background and context for the rest of the programme. It defines the asset management (AM) terms and concepts with reference to the ISO 55000 standard for an AM system, and the Global AM Landscape document. It also discusses the AM objectives of improved asset performance at reduced risks and optimal costs. Finally, it discusses the value of effective asset management and the benefit of implementing an AM system as specified in ISO 55000.

2 Measuring and Managing Performance

This module lays the foundation for the development of the AM scorecard. It explains performance measurement terms and concepts, such as objectives, KPIs, leading and lagging indicators, PDCA and data vs information. It then provides a framework for a “balanced AM scorecard” and discusses the use of benchmarking for setting targets. Finally, it emphasises the identification of forums where KPIs can be discussed and action taken, in line with the PDCA cycle, providing a template for a measurement plan. The intent is for delegates to identify appropriate KPIs for their AM scorecard after each of the remaining modules.

3 Asset Information

The starting point for any asset management system is a complete register of all the organisation’s physical assets. This module explains the need for an asset information system and explains the difference between a CMMS and an EAMS, with some selection and implementation guidelines. Next is the asset register, with some best practices regarding the asset hierarchy, relevant asset attributes, asset numbering and the relationship between the engineering and financial asset registers. It also covers document management and the importance of a document management system and configuration control.

4 Risk Management

Risk management is an integral part of AM and the ISO 31000 standard for risk management is often referred to as ISO 55000’s “sister”. It is therefore important to get a handle on risk and risk management principles, and the related concepts of “compliance” and “governance”, early in the programme. The module is largely structured according to the risk management framework in ISO 31000, covering all its steps, as well as related concepts such as the risk register, management of change, the hierarchy of risk management and the three lines of defence against risk. A real-life case study is discussed to illustrate how neglecting risk management resulted in a catastrophe.

5 Safety and Health Management

This module is not intended to replace any safety training, but rather to discuss the impact of AM on people’s health and safety. OHS is a sub-set of risk management, which focuses largely on the asset-related risks and the physical controls implemented (like guarding or sensors), and maintenance-related risks and their control mechanisms (like permits, isolation and job risk assessments). This module covers the elements of an OHS management system, specific roles and responsibilities, the hierarchy of controls, and key success factors to establish a proactive health and safety culture in the organisation.



6

Tactics for Asset Reliability

The main purpose of the reliability engineer is to prevent the negative consequences of asset failures, rather than preventing all asset failures. This module unpacks this statement in more detail by defining reliability principles and concepts (like RAM, MTBF, MTTR), clarifying the role of the reliability engineer and explaining the difference between age-related and random component failures, and the importance of the PF curve. Using this as a base, the module then describes the different maintenance approaches and how the reliability engineer can select the optimal maintenance tactics (condition-based, fixed interval or run-to-failure) for a given asset criticality, component failure profile and failure consequences, by applying the so-called FMEA or RCM process.

7

Operate for Reliability

Asset reliability and maintenance is not only the responsibility of the Engineering Department. This module explains the important role that equipment operators play to prevent forced deterioration of their assets, and to detect equipment problems before they develop into major failures. It provides a step-by-step approach to implementing Operate for Reliability (O4R), as well as useful tips to avoid pitfalls and increase the success rate of your O4R programme.

8

Precision Maintenance

It is of no use doing all the reliability analyses, defining the optimal maintenance tactics, planning and scheduling the work to perfection, if the artisans doing the maintenance work are not adhering to certain minimum quality standards. Precision maintenance addresses this problem by defining the applicable standards for torquing, alignment, balancing, lubricating, welding, and other maintenance tasks. These standards must be specified in all work instructions and the maintenance staff must be trained to apply these standards, under the coaching and control of the maintenance supervisors.

9

Maintenance Work Management

This module covers the “engine room” of the Maintenance Department – the maintenance work management process, from the triggering of a work request and its validation, to the scoping and planning of the work, its resourcing, scheduling, allocation and execution. It covers the principles and best practices for each step, as well as the responsibilities, possible pitfalls, and the KPIs to measure their success. The module also emphasises the importance of complete and accurate work order feedback, and the use of systems and technologies to streamline the process.

10

Material Management

Although material management is normally a Supply Chain responsibility (and a source of frustration for Engineering), this module explains the principles and key concepts of material management that engineers need to understand. It also addresses the important role that Engineering plays in the effectiveness of material management, eg long-term resource planning, clear material specifications, spare part criticality analysis, warranty management, and rotobles. It also explains the negative impact that squirrel stores and “free text purchases” have on the effectiveness of material management. It gives some guidelines on stock optimisation, as well as useful KPIs that can be used for material management.

11

Shutdown Management

Although shutdown management is just a special case of maintenance planning, resourcing and scheduling, this module covers the phases of a shutdown and the best practices applicable to each phase. Special attention is given to the management of “emergent work” which only becomes visible during the shutdown and could have “scope creep” implications. It also covers the governance structures and meetings required for a shutdown’s success. Finally, it discusses KPIs that can be used to monitor all aspects of a shutdown.

12

Asset Acquisition

This module covers the capital projects to acquire (build or buy) new assets. It is not a project management course, but it does explain the stage-gate process and the typical phases of a capital project. The module focuses mainly on maintenance readiness, which is the “readiness” of a new asset to be maintained and operated at the required level of availability after commissioning. This is achieved by involving the reliability engineers, maintenance managers and maintenance staff during the acquisition project. The module presents a framework of maintenance readiness activities during each project phase, the KPIs to measure its success and the potential value of an effective maintenance readiness process.

13

Asset Integrity Management

This module covers the management of special groups of assets that degrade slowly, but fail catastrophically, like dams, structures, silos, bridges, etc. Although many of the standard asset management principles apply to these assets too, the module addresses specific best practices and key success factors, such as the engineer of record, design integrity reviews during the acquisition phase, configuration control and management of change, application of the correct maintenance tasks, and regular asset integrity inspections (SIMM).

14

Life Cycle Value Realisation

This module is one of the most value-adding parts of the programme since it deals with the financial side of asset management. It consists of the following four parts:

- Quantifying the life cycle cost (LCC) and equivalent annual cost (EAC) of an asset or an improvement project, considering the time value of money
- Knowing where LCC analysis can be used to drive asset-related decisions
- Quantifying the value of a proposed improvement project in terms of cost saving, revenue increase or loss avoidance
- Compiling a business case to justify an improvement project, based on its return on investment (ROI), net present value (NPV) and internal rate of return (IRR)

15 Focused Improvement

This module addresses the processes, systems, tools and responsibilities to drive asset-related improvements. It explains the need for a governance structure to define the criteria and focus areas for improvement, and to monitor the success of the process. It covers how the daily management system uses a 3-tier problem solving structure. Furthermore, it gives an overview of the IDMAIC structure for focused improvement and the techniques used in each step including monitoring the solutions to confirm success. Finally, it explains the difference between the problem solving process and proactive improvements. A real-life case study is reviewed to illustrate it in practice.

16 People Management

This module covers the principles and practices for managing an organisation's asset management function effectively in terms of roles and responsibilities, organisational structure and interdepartmental collaboration. It also explains the process of identifying competency requirements for each role, followed by role-specific learning pathways and individual training plans. This is supplemented by on-the-job coaching and mentoring to ensure that people apply their knowledge and skills in practice.

17 Contractor and Contract Management

This module deals with the management of service providers and contractors to supplement the permanent workforce. It starts with the outsourcing decision, with some guidelines about the type of work to be outsourced and different categories of contracts. It then covers the selection and contracting process, while clarifying important aspects of contracts to be considered. It explains some best practices regarding the management of contractors, both in terms of safety and quality of work and KPIs that can be used to manage contractors more effectively.

18 Technology and Information Management

Modules 18 and 19 focus on the future of asset management, the latest trends in technology and information management (eg AI, cloud computing, drones, augmented reality, 3D printing, etc), and its application in AM, especially with asset condition management, safety and supply chain optimisation. Guidelines are provided to assist senior managers in deciding which technologies apply to their organisation to prevent wasting money on fads and gimmicks.

19 Sustainable Operations

This module covers a range of asset management topics related to the ongoing sustainability of the organisation. After clarifying some terms and concepts, it covers aspects like social responsibility and community development, water conservation and non-pollution, energy conservation, control of greenhouse gas emissions, renewable energy sources and the organisation's carbon footprint. It also discusses how sustainability should be a consideration in all aspects of asset management during all phases of the asset life cycle.

20 Asset Portfolio Optimisation

Modules 20 and 21 deal with strategic asset management planning, with this module focusing on decisions and strategies regarding the size and composition of the whole asset portfolio. The first step is to analyse the future demand for the organisation's products and services. This demand forecast and organisational objectives for profitability and risk reduction are then translated into a long-term plan for the asset portfolio (new asset acquisitions, end-of-life asset replacements and mid-life asset upgrades). The module provides guidelines for this process, eg how to consider the performance, condition, age and life cycle plans for each asset class. The outcome is a phased capital budget, called a long-term asset plan (LTAP).

21 AM Policy and Strategy

The final module of the course pulls all the other modules together into the development of an AM policy and an AM framework as an asset management statement of intent for the organisation. The module then covers the development of a high-level strategic AM plan (SAMP), which includes the AM objectives and LTAP. In line with ISO 55001, the module then explains how to develop two types of plans:

- **An asset life cycle plan** for each major asset type, which defines its economic asset life, maintenance plans and refurbishment/upgrade plans
- **An AM implementation plan or roadmap**, which defines the major activities to implement AM and an AM system, prioritised and scheduled over a period of time

The last topic in the training covers change management, which is a critical success factor for the implementation of AM and an AM system.



Delivery Format

The Masterclass is delivered as a blended training programme over 12 weeks, requiring about 100 notional hours of learning. It comprises a mix of the following:

- **Self-directed learning (SDL)**

Delegates work through the principles, best practices, examples and guidelines on their own, with the flexibility of doing it at their own pace and at a time that suits them. It follows a blended learning approach to maximise the effectiveness of the learning

- **Facilitated live engagement (LE) sessions**

Delegates have the opportunity to ask questions, discuss concerns and get further clarification from the facilitator. Group work and classroom discussions about real-life case studies and controversial topics, allow delegates to apply the theory in practice and gain from the experience and insight of their peers

- **Formative assessments**

Delegates can confirm their understanding of the material by selecting the ideal course of action for a series of practical scenarios

- **Practical project**

Delegates apply their learning in practice by developing an AM policy, implementation strategy and AM scorecard for their own organisation

- **Coaching and mentoring**

Delegates get individual feedback on their projects from an experienced consultant, including attending a virtual workshop with the senior management team

All learning material will be made available via Pragma's learning management system (LMS), which will also be used for submitting assignments and assessments and accessing the virtual classroom.



The live engagement sessions will make use of Pragma's interactive virtual training classroom.

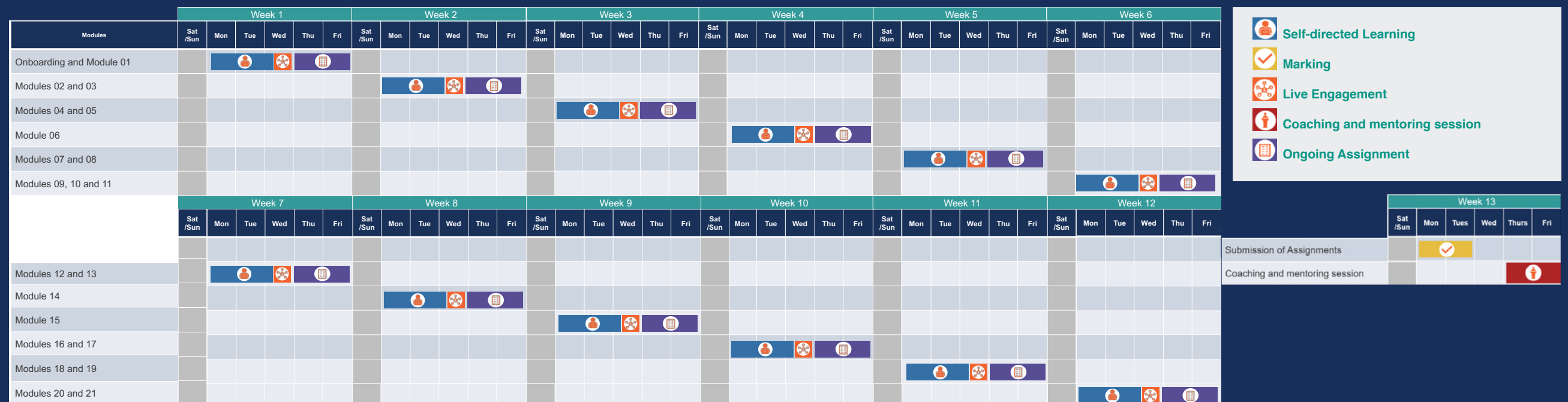
Programme facilitators



The programme is led by a diverse team of senior engineering consultants from Pragma who are subject matter experts in their respective fields. They bring a wealth of knowledge and extensive experience, enriching facilitated live engagement sessions and providing personalised coaching support to delegates.

The blended programme has a fixed rhythm of four hours of SDL per week and four hours of LE, with an additional hour per week spent on the formative assessment and project. This rhythm is shown in the diagram below:

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