

SCHEME HANDBOOK

EXEMPLAR.

The logo of the Institution of Mechanical Engineers, featuring the text "Institution of MECHANICAL ENGINEERS" in white on a red background.

The Monitored Professional Development Scheme (MPDS) is the Institution of Mechanical Engineers' quality-controlled route for the Initial Professional Development of young engineers, leading to corporate membership of the Institution and registration with the Engineering Council as a Chartered Engineer or Incorporated Engineer.

Accreditation of company MPDS Schemes is overseen by the Institution's Professional Development Standards Committee (PDSC). Over the course of a large number of MPDS accreditation visits, PDSC Panel Members have observed that the most effective Schemes specify the roles and responsibilities of the participants and define the key Scheme processes in some form of Scheme Manual.

This document provides a framework for the production of a Scheme Manual. This framework is not intended to be prescriptive or all embracing. Rather, it is offered as a fit for purpose model of best practice which a company can adapt to suit their particular arrangements.

The focus is in on IMechE requirements, but much of the content is common to the requirements of other Professional Institutions registered with the Engineering Council.

In producing a Scheme Manual, it is recommended that the author(s) aim for simplicity and clarity and try to avoid overlaps between the responsibilities of the participants. Experience shows that the development of a Scheme Manual can clarify responsibilities and processes and improve the effectiveness of the Scheme.

Finally, it is suggested that production of a Scheme Manual can be a good mini project for one or more Developing Engineers on an MPDS Scheme.

MECHANICAL ENGINEERING DEVELOPMENTS LIMITED

Monitored Professional Development Scheme

Scheme Manual

IMechE Scheme No: PDS***

	Name	Signature	Date
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1. DOCUMENT ISSUE RECORD

- Identify the minimum frequency of document review by the Originator
- Include a commitment to update the document to reflect major organisational changes and updates to the scheme process arising from participant feedback
- Identify the Manual as a maintained document within the company Quality Assurance system
- Incorporate an amendment record into the document (Example format below)

Issue Level	Detail of issue	By	Date
Draft 001	First draft, issued for comment to scheme participants and scheme owner.	WJH	25 October '07
Draft 002	Updated draft, issued for comment to scheme participants and scheme owner.	WJH	19 January '08
Draft 003	Updated draft, incorporating final.	WJH	25 February '08
Issue 001	First Issue, including comments. Accepted by Reviewer and approved by Scheme Sponsor.	WJH	02 May '08

2. FOREWORD

Include here a message from the senior company staff member committed to the success of the MPDS Scheme. This will normally be the 'Person with Ultimate Responsibility for the Scheme', as identified in the Company's MPDS application. This Section provides an opportunity to:

- Welcome Developing Engineers (DE) to the Scheme, with a commitment to support them in achieving Chartered or Incorporated Engineer status
- Explain that training and development will be carried out to the requirements of the company's accredited MPDS Scheme with support from line managers, mentors and administrative staff
- Emphasise that, within this framework, each DE must comply fully with the Scheme requirements, demonstrate a proactive attitude and own their personal development
- Reinforce the Sponsor's personal commitment to the Scheme and the importance of the Scheme in developing future talent within the business
- Highlight any key company organisational, commercial or cultural issues which impact on the Scheme
- Include a message for the other Scheme participants, including line managers, mentors and administrators. These can sometimes be forgotten in the enthusiasm to address the scheme entrants. Mentors deserve a special mention; they are volunteers and are the official representatives of the Professional Institutions in the workplace

3. GLOSSARY

- Include here a one sentence definition of the responsibilities of the key participants, with a full definition of roles and responsibilities to be provided in Section 6. Note that roles and titles are not mandatory and will be company dependent. For example:

Scheme Owner

The Engineering Director has ultimate responsibility for the Scheme.

Scheme Administrator

The Development Officer is responsible for coordination of the Scheme and for its day-to-day administration.

Etc.

- List any acronyms which appear in the document, relating to professional requirements (e.g. MPDS, UK-SPEC) or to company organisation/processes

4. COMPANY TRAINING & DEVELOPMENT POLICY

- Summarise company policy for training and development and describe how the MPDS Scheme fits in with wider company standards and processes
- List the key elements of company policy, such as a drive towards competence based training
- Identify any national or international training standards deployed by the company and associated accreditation objectives
- Identify any particular aspects of the MPDS Scheme which are distinct from other training & development, for example a commitment to expose the DE to an overseas secondment
- Record the company's policy on CEng, IEng and Further Learning
- Consider including an organisational diagram in the Manual, identifying the functions and people with prime responsibility for the company's overall training and development programme

5. SCHEME ORGANISATION

- A brief Section which describes the main responsibilities and interfaces involved in the MPDS Scheme. It is suggested that this is essentially an organisational diagram which identifies the links between the Sponsor, Scheme Coordinator, Scheme Administrators, Line Managers, Mentors, Developing Engineers, Attachment Supervisors and IMechE etc. This can help a Line Manager or Mentor to introduce the Scheme to a new entrant.

6. RESPONSIBILITIES OF SCHEME PARTICIPANTS

Summarise the main responsibilities of each of the Scheme's participants, together with a list of key tasks

Do not be tempted to overburden the participants with a multiplicity of key tasks; keep them to a minimum set to implement an effective Scheme; the staff involved inevitably have plenty of other responsibilities in their 'day job'

Ensure that there is minimum overlap between the key tasks for each participant. If there is significant overlap the Scheme is not well designed and confusion will arise. The discipline of documenting responsibilities in this Manual is a good test of the Scheme design.

Some suggested examples are included below:

6.1. Scheme Owner

The Scheme Owner has ultimate responsibility for the Scheme and will be at senior management level. The Owner will be aware of company recruitment and staff development needs and will be able to influence company policy on behalf of the Scheme if required.

Key Tasks:

- Champion the MPDS Scheme at senior level within the company
- Work with the Scheme Administrator to ensure that the Scheme meets company recruitment, training and development needs
- Maintain a visible commitment to the Scheme, recognising successes and supporting initiatives to rectify any deficiencies
- Depending on the size of the Scheme, chair a Steering Group to oversee the health of the Scheme

6.2. Scheme Administrator

Responsible for implementation of the MPDS Scheme to meet company training and development requirements.

Key Tasks:

- Ensure that all participants are aware of their roles and responsibilities
- Act as a focal point for Human Resources and line managers on the operation of the Scheme
- Allocate DEs to initial locations within the company, based on business need and individual aspirations.
- Ensure that each DE has a Line Manager and a Mentor

- Develop generic training plans for DEs and secure training resources
- Ensure that each DE has a personal training plan based on the generic plan, tailored to his/her previous experience and personal development needs
- Co-ordinate DE attachments and ensure that attachments have associated development objectives
- Ensure that DEs and Mentors are submitting reports and assessing them in a timely manner
- Arrange periodic feedback sessions to assess the health of the Scheme
- Ensure that the Scheme Manual is included in the company's suite of Quality Assurance documentation and that internal audits of the Scheme are carried out, ideally on an annual basis. Receive the outcome of the audit and act on any findings
- Interface with the Professional Institutions to ensure that the Scheme is registered, meets MPDS requirements and is accredited in accordance with the Institutions' requirements

6.3. Developing Engineer

Responsible for...

Key Tasks:

- ...
- ...

6.4. Mentor

Responsible for the provision of independent support and advice to the DE, with a focus on personal development and the achievement of UK-SPEC competences.

Key Tasks:

- Review the DE's previous experience and advise on the scope of any previous experience claim within MPDS
- Counsel and guide the DE and act as the representative of the IMechE in respect of achieving Corporate Membership and Chartered or Incorporated status
- Assess the DE's progress against UK-SPEC competences and provide timely and constructively critical inputs to e-MPDS records
- Maintain contact with the DE's Line Manager(s) and Attachment Supervisors to confirm that MPDS commitments are being met
- Encourage the DE's participation in activities outside day-to-day business demands, such as liaison with schools, promotion of engineering as a career
- Take direct action if such action is outside the scope of the DE's ability or authority

- Be available for consultation by the DE on a planned basis and in response to reasonable short notice requests for independent advice
- Maintain mentor skills and currency by attending periodic training and by exchanging experience with fellow mentors

6.5. Line Manager

Responsible for...

Key Tasks:

- ...
- ...

6.6. Attachment Supervisor

Responsible for...

Key Tasks:

- ...
- ...

Larger companies may have additional roles, such as Discipline Coordinators for the principal engineering disciplines. Responsibility for interfacing with the Professional Institutions can be delegated by the Scheme Coordinator to the Discipline Coordinator.

7. SCHEME OPERATION

A description of the main activities in the MPDS process. A number of suggested Sub-Sections are listed below, but these are not intended to be prescriptive. Reflect here how the company scheme operates in practice.

INTRODUCTION

An overview of the Scheme's operation, based on the responsibilities and key tasks listed in Section 6 above. It may be helpful to include some form of process map.

- Refer to the accreditation of the Scheme by the IMechE under their MPDS arrangements
- Describe the broad format of the Scheme, comprising company orientation training, generic training, technical training, soft skills training and job specific training, which lead into to a period of increasing responsibility
- Emphasise the focus in an MPDS Scheme on achieving skills and experience in 5 key competence areas, as defined in UK-SPEC; refer to Appendix A and the Engineering Council website, www.engc.org.uk

- State an expectation that a graduate on an accredited MPDS Scheme should be capable of meeting the competence levels required for Chartered or Incorporated status on completion of a four year MPDS programme of training and increasing responsibility. However, an application for Professional Review should be based on an objective assessment by the mentor of the particular candidate's competence - MPDS is not a 'time-served' process

INITIAL MEETING WITH MENTOR

This Sub-Section should explain the purpose of the initial meeting between the Mentor and the DE. In particular:

- Introduction of the Mentor to the DE
- Review of DE's previous experience, which may be claimed within MPDS. A conservative approach is recommended, with any claim founded on the achievement of competence related experience
- Introduce the DE to the UK-SPEC competences and the associated criteria and levels required for CEng/IEng
- Explain how the company technical and soft skills training & development programme is integrated with MPDS requirements and explain the mapping between company and UK-SPEC competences
- Ensure that the DE becomes registered with the IMechE at an early date
- Introduce the DE to e-MPDS. Stress the importance of disciplined record keeping within e-MPDS, and encourage the use of 'Plans' and 'Evidence', in addition to quarterly and annual reporting
- Emphasise that the DE's development is primarily his/her responsibility and that the support framework is there to facilitate this development not to make it happen. Hence the responsibility lies with the DE to initiate meetings with his/her Mentor
- Advise the DE to find out (if not already known) where his/her academic qualifications stand vis-a-vis the academic requirements for the level of membership aspired to. If his/her qualifications do not meet the requirements, encourage the DE to research Further Learning on the IMechE website and to determine what help the company may be able to provide to assist the DE to successfully complete Further Learning

TRAINING & DEVELOPMENT PLAN

- Describe the format of a generic training & development plan for a DE, noting that this will probably have to be tailored to individual requirements to reflect previous experience, job specific training etc.
- A generic plan will include a short induction period to orientate the DE to his/her new environment. This should include key health & safety requirements
- Identify who is responsible under the Scheme arrangements for drawing up the DE's personal plan. This will vary from company to company; if the DE reports to a single line manager throughout the duration of his/her IPD it is likely that the Line Manager will take prime responsibility for developing the plan with the DE, liaising with the Mentor to confirm that it meets UK-SPEC requirements. In situations

where the line manager changes throughout IPD the Mentor is likely to take more responsibility for developing the plan with the DE, liaising with line managers to ensure that it is consistent with day to day business requirements

- Include a copy of the generic plan in an Appendix (See example in Appendix B). Ideally, where company training courses and on job training are linked to company competences, cross reference these to UK-SPEC competences. Emphasise here that the same rigour must be applied to on job training as to course-based training; both require meaningful training aims and objectives, and post training review/assessment

ATTACHMENTS

- Most MPDS Schemes involve attachments to business units across the company. Identify here the need to include these in the training plan, with blocks of time allocated, even if precise dates and destinations are not known at the outset
- Emphasise the need for Line Managers and Mentors to facilitate such attachments to meet Scheme requirements. Also, DEs should be encouraged to use their initiative to identify opportunities to acquire relevant experience as their own networks develop
- There must be a clear handover of line management responsibility to the Attachment Supervisor for the duration of the attachment
- It may also be necessary to arrange for a 'delegate mentor' to be appointed for the duration of an attachment, particularly if the attachment is geographically remote from the base location of the DE and Mentor; this is permitted under the IMechE's MPDS arrangements
- Reinforce the need for all attachments to have aims and objectives, with a post attachment review involving feedback from the Attachment Supervisor. The Scheme Co-ordinator should maintain an overview of attachments via feedback sessions with DEs and mentors to ensure they are adding value and to identify any improvements needed
- The DE must recognise that he/she is an ambassador for their local business unit when they are attached to another unit

SCHEDULED MEETINGS

- Meetings between the DE and the Line Manager will be initiated as a result of normal business and staff development processes
- Meetings between the DE and the Mentor need to be scheduled and the prime responsibility for arranging these meetings lies with the DE
- Reviews between the Developing Engineer and the Mentor shall be carried out at least once per quarter, to review progress, set objectives for the next quarter and discuss broader development needs
- It is recommended that the Scheme Co-ordinator arranges periodic feedback sessions with DEs, particularly in the early months after a recruitment campaign
- An annual get together of mentors should be strongly encouraged, organised either by one of the mentors or by the Scheme Co-ordinator. This will enable experiences and problems to be shared and assist in securing consistent

assessments against UK-SPEC competences

- If a Scheme Steering Group is formed it should meet at least annually to review the overall health of the Scheme and identify any required improvements

RECORD KEEPING

- Identify e-MPDS as the prescribed record keeping tool for IMechE MPDS candidates
- Emphasise that quarterly and annual reports are mandatory requirements of an MPDS scheme, and hence of e-MPDS. 'Plans' and 'Evidence' are optional features within e-MPDS, and their use is recommended
- Note that e-MPDS is based around quarterly objective setting and review, with annual assessments required by the Mentor. The Mentor can also approve 'Plans' and assess 'Evidence' against the UK-SPEC competences. The benefit of using 'Plans' and 'Evidence' is that the data are auto-mapped into quarterly and annual reports
- Emphasise the need for discipline in entering data into e-MPDS and in responding promptly to requests for approval etc.

PERIOD OF INCREASING RESPONSIBILITY

- Many DEs make a real contribution to the business in their first two years of employment, even though their initial schedule is often dominated by formal training. However, most companies anticipate that the DE will take up a substantive post some two years after recruitment. This Sub-Section should describe the sort of responsibility a DE will take on at this stage and emphasise the need to continue to develop engineering competences and seek opportunities to gain experience in support of these competences. Training at this stage is likely to be less formal and more on job. Emphasise the need to maintain the MPDS disciplines of planning, objective setting and review with the Mentor during this period, with a continued focus on meeting UK-SPEC competences

CENG/IENG APPLICATION

- Chartered or Incorporated status should only be sought when the Mentor is satisfied that the DE has met the five UK-SPEC competences at the appropriate level. Although this may well be the case on completion of a four year MPDS Scheme, it is worth re-stating that this is not a time-served qualification. It may well be in the DE's interest to fill any gaps in knowledge or experience or to strengthen particular competences in order to be confident that he/she is genuinely working at the appropriate level, before applying for Professional Review

CONTINUING PROFESSIONAL DEVELOPMENT

- The Engineering Council states that "All Engineers will be committed to the needs for adapting to change, and to continuous improvement to their performance as professionals. Continuous learning and CPD will be an integral part of this process."
- After achieving Chartered or Incorporated status engineers are required by the IMechE to maintain and enhance their professional knowledge, skills, competency and currency in their field. CPD does not merely mean attending courses, but takes place in a number of contexts and a variety of activities

- Whilst The IMechE is not prescriptive as to the content, approach or effort an individual puts into their development, it is expected that he/she will put effort into a self-managed, structured approach to further learning. The Institution is investing in its CPD service and it is advisable to check on developments on its website, www.imeche.org/profdev/cpd
- It is worth noting in this Sub Section the opportunity for a newly Chartered or Incorporated engineer to 'put something back' as an MPDS mentor, as part of his/her CPD

8. Scheme Quality Assurance

The IMechE and other Professional Institutions will accredit an MPDS Scheme for a maximum of 3 years. A healthy Scheme will involve a degree of internal self-assessment during the period between formal accreditation visits. This Sub Section should:

- Commit to incorporation of the Scheme and associated documentation and processes into the company's Quality Assurance system. An MPDS Scheme is managing the development of key assets and deserves this level of scrutiny
- Call for a periodic internal audit of the Scheme. This will identify any corrective actions required to maintain or improve the Scheme. The documented outcome of such a review can be extremely helpful to external assessors and provides confidence that the Scheme is being actively managed. The customer for the audit will normally be the Scheme Co-ordinator

APPENDIX A

UK-SPEC COMPETENCES

The five UK-SPEC, latest issue 4 engineering competences (A-E) for Chartered and Incorporated Engineers are listed below, together with Sub Competences A1, A2 etc. UK-SPEC provides some suggested activities under each Sub Competence to support development of the competence. Mentors and Developing Engineers will appreciate guidance on company specific targets to complement the UK-SPEC suggestions. It is recommended that a combination of the two are included here, noting that, 1) the UK-SPEC activities are not prescriptive and 2) the combined set will not represent an exhaustive list.

Examples are provided below, for competences A1, C4, with UK-SPEC suggestions in normal typeface and supplementary company items in italics.

A	Chartered Engineers shall use a combination of general and specialist engineering knowledge and understanding to optimise the application of advanced and complex systems.	Incorporated Engineers shall use a combination of general and specialist engineering knowledge and understanding to apply existing and emerging technology.
A1	Have maintained and extended a sound theoretical approach to enable them to develop their particular role	Have maintained and extended a sound theoretical approach to the application of technology in engineering practice
A2	Are developing technological solutions to unusual or challenging problems, using their knowledge and understanding and/or dealing with complex technical issues or situations with significant levels of risk.	Use a sound evidence based approach to problem solving and contribute to continuous improvement
B	Chartered Engineers shall apply appropriate theoretical and practical methods to the analysis and solution of engineering problems.	Incorporated Engineers shall apply appropriate theoretical and practical methods to design, develop, manufacture, construct, commission, operate, maintain, decommission and recycle engineering processes, systems, services and products
B1	Take an active role in the identification and definition of project requirements, problems and opportunities	Identify, review and select techniques, procedures and methods to undertake engineering tasks
B2	Can identify the appropriate investigations and research needed to undertake the design, development and analysis required to complete an engineering task and conduct these activities effectively	Contribute to the design and development of engineering solutions
B3	Can implement engineering tasks and evaluate the effectiveness of engineering solutions.	Implement design solutions for equipment or processes and contribute to their evaluation.
C	Chartered Engineers shall demonstrate technical and commercial leadership	Incorporated Engineers shall provide technical and commercial management.
C1	Plan the work and resources needed to enable effective implementation of a significant engineering task or project.	Plan the work and resources needed to enable effective implementation of engineering tasks and projects.

C2	Manage (organise, direct and control), programme or schedule, budget and resource elements of a significant engineering task or project	Manage (organise, direct and control), programme or schedule, budget and resource elements of engineering tasks or projects
C3	Lead teams or technical specialisms and assist others to meet changing technical and managerial needs.	. Manage teams, or the input of others, into own work and assist others to meet changing technical and management needs
C4	Bring about continuous quality improvement and promote best practice.	Take an active role in continuous quality improvement
D	Chartered Engineers shall demonstrate effective communication and interpersonal skills.	Incorporated Engineers shall demonstrate effective communication and interpersonal skills.
D1	Communicate effectively with others, at all levels, in English	Communicate effectively with others, at all levels, in English
D2	Clearly present and discuss proposals, justifications and conclusions	Clearly present and discuss proposals, justifications and conclusions
D3	Demonstrate personal and social skills and awareness of diversity and inclusion issues.	Demonstrate personal and social skills and awareness of diversity and inclusion issues.
E	Chartered Engineers shall demonstrate a personal commitment to professional standards, recognising obligations to society, the profession and the environment.	Incorporated Engineers shall demonstrate a personal commitment to professional standards, recognising obligations to society, the profession and the environment.
E1	Understand and comply with relevant codes of conduct	Understand and comply with relevant codes of conduct.
E2	Understand the safety implications of their role and manage, apply and improve safe systems of work	Understand the safety implications of their role and manage, apply and improve safe systems of work.
E3	Understand the principles of sustainable development and apply them in their work	Understand the principles of sustainable development and apply them in their work
E4	Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice	Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice
E5	Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.	Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.

COMPETENCE LEVELS

Level 1 (Aware) - Performs the activity with significant supervision and guidance; performs basic routine and predictable tasks; little or no individual responsibility. (This level of competence would not normally be sufficient for election to Membership)

Level 2 (Familiar) - Performs the activity in a range of contexts; supervision only required in more complex circumstances; some individual responsibility or autonomy. (This indicates a minimum level of competence for election to Membership, which should be supplemented, by higher levels of competence in the areas most relevant to the field of engineering in which the applicant is employed).

Level 3 (Skilled) - Performs the activity in some complex and non-routine contexts; significant responsibility and autonomy; can oversee the work of others. (This indicates a normal level of competence for election to Membership).

Level 4 (Expert) - Performs the activity in a wide range of complex and non-routine contexts; substantial personal autonomy; can develop others in the activity. (This indicates a high level of competence and suitability for election to Membership and possibly Fellowship).

APPENDIX B

EXAMPLE GENERIC TRAINING & DEVELOPMENT PLAN

Activity	Training Medium	Company Competences	UK-SPEC Competences
Induction Training			
Company overview	Induction course	C1	
Site orientation	Induction course	C1	
Health & Safety	Induction course	C2	E1, E2, E5
IT security	Induction course	C2	E1
...			
Core On Job Training			
Quality assurance	QA course	S1	C4
Power plant design & technology	D&T course	T1	A1
Safety case management	SCM course	S1	B3, E2, E5
...			
Optional On Job Training			
Materials technology	University of Manchester module M/Mat/07	T2	A1, B3
Inspection methods	Inspection Technology Ltd course IT/Insp/07	T2	A1
Risk assessment	Risk Associates course R/Risk/07	S2	C2, E2, E5
...			
Core Off Job Training			
Presentational skills	Presentational Skills course and observed on job presentations	P1	D1, D2
Negotiating skills	Negotiating Skills course	P2	D3, E5
Project management	Project Management Foundation course + Microsoft Project training	O1	C1, C2, C3
Financial & commercial awareness	Finance for Engineers course	F1	C2
...			
Optional Off Job Training			
HAZOP	External HAZOP course	T3	A1, E2, E5
FMEA	External FMEA course	T3	A1, B3
...			
Attachments			
Site commissioning	New fuel handling plant at Torsham Power Station	T4, P3	A1, D3
Customer placement	TBA	P3	D3
...			

APPENDIX C

INFORMATION SOURCES & CONTACTS

IMechE Website

www.imeche.org

IMechE Membership Enquiries

T 0845 226 9191

E membership@imeche.org

MPDS Web links

www.imeche.org/profdev/mpds

MPDS Helpline

T 0845 226 0211

E mpds@imeche.org

Engineering Council

www.engc.org.uk