



College of Contract Management
United Kingdom

Professional Diploma in Forensic Schedule Analysis



Syllabus

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1. Course Structure and Rules of Combination

1.1 Rationale

The Professional Diploma in Forensic Schedule (Delay) Analysis is designed for Planners, Delay Analysts, Claims Consultants, Engineers, Quantity Surveyors, Project Control Managers, and Contract Managers working for Civil Engineering, Oil and Gas, Petrochemical, Infrastructure, Power Plants, Nuclear, Buildings and Pipeline Projects in the Engineering, Procurement and Construction Sectors, who are progressing into a Delay Analysis role. This qualification develops the learner's knowledge and skills in Delay Analysis Techniques to resolve a construction delay claim.

Upon successful completion of the course, students will be able to determine the root cause of project delays and its effect on the suggested schedule by using an established schedule analysis technique appropriate for the project under analysis. Forensic schedule analysis determines how specific events impact a project schedule.

This course will be delivered by experts with significant experience in the industry, and therefore are highly experienced in forensic schedule analysis. They have been involved as experienced lecturers and teachers within a number of courses. The course will be delivered in an interactive and practical format. Since the course includes practical examples and case studies, the course content reflects the practical aspects and challenges faced by professionals in the industry.

1.2 Career Progression

The course provides the underpinning knowledge and skills to advise about the potential risks of proceeding with a project, should a forensic schedule analyst be required to take short cuts or rely upon the work of others to stay within a very tight budget. This course enhances the skills required to work as an expert witness.

1.3 Course Rules of Combination

The course can be completed in 6 months (approximately 26 weeks), and includes an assessment at the end of each module. Each module is worth 6 credits.

- FS410: Schedules and Primavera P6
- FS420: Schedule Analysis and Protocols
- FS430: Delay Events
- FS440: Determination

To achieve the Professional Diploma, candidates are required to complete all modules and pass their respective final assessments.

1.4 Entry Requirements

- Minimum 18 years old **and**
- Have a minimum of 2 years managerial or planning experience in the construction or related industry.

1.5 Module and Assessment Grades

The Assessor will award a grade for the achievement of each module (Fail, Pass, Merit or Distinction). Grades apply to overall performance in modules and assessments.

Indicative marking descriptors for differentiating between levels of achievement when marking assessments are provided below (Section 1.8).

The overall grade for a qualification is calculated using a points system. Each module grade attracts points as follows:

Fail	0 points
Pass	1 point
Merit	2 points
Distinction	3 points

1.6 Assessment

The assessment process is set by the College of Contract Management, defining the requirements learners are expected to meet in order to demonstrate that a learning outcome has been achieved. All learning outcomes must be achieved in order to gain attainment of credit for that module.

All completed assessments are marked and verified internally, and are subject to approval by our partner universities or awarding bodies.

The assessment criteria are based on 3 areas:

- 1. Task Achievement** - This is a measure of how well the candidate answers the task question(s) and identifies the important aspects of the task.
- 2. Technical Content** - This is a measure of how well the candidate identifies, describes and evaluates the technical aspects of the task.
- 3. Presentation** - This is a measure of how well the candidate presents the assessment, which includes the quality of the structure and paragraphing, the quality and relevance of visual or graphical content and the referencing used for quoted sources.

1.7 Assessment Policies

1. All submission of assessments must include:
 - a. a copy of the full brief given by the Examinations Officer or Course Administrator;
 - b. all source material must be cited in the text and a full bibliography of source material (including author, title, publisher, edition and page) listed at the end of the submission.
2. All submissions must be submitted into our system as instructed by the Examination Officer or Course Administrator.
3. All submissions under the student's name must only be the work of that student. All information sources must be acknowledged. There is the **possibility of failing the modules if the content of the assessment are deemed be plagiarised** as set out in the rules and regulations of the College.
4. All submissions should be in pdf format (unless software files are specified) and students must keep a copy of all submitted work for reference purposes. Receipt will be acknowledged by the College once the work is submitted via our online exam portal.
5. Whenever a candidate submits work after the approved deadline without an authorised extension, a maximum "Pass" grade will be awarded.
6. The Assessor will comment on the quality of the work for learning purposes.
7. Application for an extension must be requested prior to the submission deadline. Submissions must be made on the exam portal for each module extension request. A primary extension (two weeks) request can be made without the submission of any evidence or reasoning, any further extension requests will require submission of supporting documentation. All requests must be addressed to the Examination Officer or Course Administrator.

1.8 Indicative Marking Descriptors

Note: Please note that the bands below describe indicative characteristics only. An overall holistic approach is required when assessing a candidate's work and assigning a grade. Please read these grading bands in conjunction with the College of Contract Management Assignment Policy.

Grade	Task Achievement - The Relevance of the Response	Inclusion of Relevant Technical Knowledge in Content	Presentation/Coherence
Distinction			
70%+	The work demonstrates a comprehensive understanding of the task. All relevant information is included. The main issues are effectively identified and analysed. There is evaluation and some analysis of solutions to issues relevant to the task. The response shows control of content within the word count.	The work demonstrates a strong understanding of a wide range of technical issues relevant to the task. There is analysis of the advantages/disadvantages of possible choices, risks and potential outcomes.	The work is appropriately structured and the argument is developed coherently. There is a recognised form of source referencing which supports the points in the task. Paragraphing and titling are used effectively to assist the reader. The use of visual/graphical information is clear and effective in assisting the reader. The graphical information is relevant to the task and is accurate.
Merit			
60-69%	The work demonstrates a clear understanding of the main issues relevant to the task. The issues are explained effectively and potential solutions identified. There is some attempt to analyse the merits of the solutions to the task. The task is broadly achieved within the word count, if relevant to assignment.	The work demonstrates an understanding of the key technical issues of the task. There is clear description of relevant technical aspects with some attempt to evaluate the merits of these as appropriate to the task.	Demonstrates an awareness of presentation and an attempt to present the information with clarity and coherence. There is referencing of sources and use of paragraphing and titling to assist the reader. There is use of clear graphical information to support the assignment which has broad relevance to the task. There may be some limited inaccuracies/ omissions in these.
Pass			
40-59%	The work demonstrates an understanding of the task. The main points are identified and the task is achieved. There is no attempt to evaluate or analyse the solutions. There may be some inaccuracies, omissions and irrelevant content. There may be lack of control in relation to the word count.	The work demonstrates an understanding of the main technical issues which are identified. This may be limited to description with little evidence of evaluation. There may be some omissions and inaccuracies in the detail. There may be some irrelevant details.	There is an attempt to structure the information. There is evidence of paragraphing and titling which is not always appropriate. Some basic graphical information may be included which is of some assistance to the reader. There may be some omissions or inaccuracies. The work is generally coherent but there may be occasional lapses in coherence and structure.
Fail			
0-39%	The work shows a poor understanding of the task. Frequent inaccuracies. Failure to identify important aspects of the task. Much of the information is irrelevant to the task. There may be evidence of copying and pasting from external sources. The response may be limited to lists of words with no attempt to explain the relevance/merits of these to the task. The assignment falls short of the word count.	The work demonstrates a lack of understanding of the technical aspects. There are omissions of important technical information. Errors are evident in the technical content. There is no attempt to explain the relevance of the technical content to the task.	Lacks structure and may be limited to lists of points which are not developed. Disorganised in structure causing difficulty for the reader to understand the points. The response is illegible or incoherent in places. No referencing of external sources. The graphical illustrations are of poor quality or absent. They may be irrelevant. There may be errors and a lack of clarity causing difficulty for the reader to understand.

1.9 Calculating Overall Qualification Grade

To calculate the overall qualification grade, the individual module grades should be added together and compared to the table below.

Candidates must pass all 4 modules of the course.

Total Points for all 4 Modules	Overall Grade
12	Distinction
11	
10	
9	Merit
8	
7	
6	Pass
5	
4	
3 or fewer	Fail

Candidates must achieve at least a Pass in all 4 modules to be awarded the Professional Diploma.

1.10 Mandatory Modules

Module Reference	Title	GLH	Credit Value
FS410	Schedule and Primavera P6	60	6
FS420	Schedule Analysis and Protocols	60	6
FS430	Delay Events	60	6
FS440	Determination	60	6

FS410: Schedule and Primavera P6

Learning outcomes: The learner will	Assessment criteria: The learner can
1. Demonstrate an understanding of the Fundamentals of Planning and Primavera P6	1.1 Establish Early and Late Start/Finish Times, Critical Path, Float. 1.2 Determine types of Schedules. 1.3 Identify the benefits of Using Primavera P6. 1.4 Evaluate P6 EPPM and P6 PPM. 1.5 Manage Project Window and Enterprise Project Structure and Toolbar. 1.6 Build and Manage EPS (Enterprise Project Structure) and OBS (Organisation Breakdown Structure).
2. Produce projects in Primavera P6.	2.1 Provide an overview and navigation. 2.2 Create new projects. 2.3 Import and export projects. 2.4 Create WBS (Work Breakdown Structure).
3. Manage activities and resources in Primavera P6.	3.1 Add and manage activities to the WBS, creating relationships, CPM (Critical Path Method), total float, assigning constraints and scheduling. 3.2 Define resources and roles, analysing resource performance, and adding costs to the schedule.
4. Manage baselines and updating schedules in Primavera P6.	4.1 Manage base line. 4.2 Update schedules with dates, resources, and costs. 4.3 Configure enterprise data. 4.4 Publish P6 data and creating reporting schedules. 4.5 Demonstrate earned value analysis.

Recommended Reading

1. Mubarak, S. (2010) *Construction Project Scheduling and Control*. 2nd ed. Wiley.
2. Harris, P. (2010) *Project Planning and Control Using Primavera P6*. Eastwood Harris Pty Ltd.
3. Oracle. (n/a) *Primavera P6 Project Management Reference Manual*. Version 7.0.
4. Jerry Brown Governor, *Project Scheduling with Primavera P6 Training Manual*, December 2011, Ver 1

FS420: Schedule Analysis and Protocols

Learning outcomes: The learner will	Assessment criteria: The learner can
1. Understand construction delay.	1.1 Define the causes of delay. 1.2 Distinguish excusable from non-excusable delay. 1.3 Describe compensable delay. 1.4 Describe and distinguish concurrent/sequential delay. 1.5 Explain important terms & definitions.
2. Identify the strengths & weaknesses of the various delay analysis methods.	2.1 Understand the general advice in the Society of Construction Law (SCL) protocol. 2.2 Comprehend the taxonomy of forensic schedule analysis. 2.3 Understand the basics of: As-planned vs. as-built schedule analysis; impact as-planned scheduled analysis; Collapsed as-built schedule analysis; Time impact analysis; and windows analysis methods.
3. Assess the purpose and process of extension of time claims.	3.1 Identify relevant contract terms. 3.2 Discuss the purposes of extension of time requests and change orders. 3.3 Appreciate the relevance of the programmes & understand important programme terms. 3.4 Develop an understanding of the basics of prolongation costs.
4. Appreciate certain challenges in forensic schedule analysis.	4.1 Appreciate the challenges, and devise solutions, in relation to: 4.2 Assess revised & accelerated programmes; 4.3 Display ownership of float; 4.4 Exclude concurrent delay in contract; 4.5 Display functional concurrency 4.6 Provide retrospective v. Prospective analyses; and 4.7 Monitor other practical challenges.
5. Understand the process of applying forensic schedule analysis in practice.	5.1 Define the scope of a delay analysis exercise. 5.2 Identify and apply contract terms. 5.3 Identify the relevant project history. 5.4 Categorise and make best use of records. 5.5 Develop implementation techniques. 5.6 Present delay analysis results effectively.

Recommended Reading

1. Baldwin, A. and Bordoli, D. (2014) *A Handbook for Project Planning and Scheduling*; Chichester: Wiley Blackwell
2. Lowe, S., Manginelli, W., Nagata, M. and Trauner, T. (2017). *Construction Delays: Understanding Them Clearly, Analyzing Them Correctly*. 3rd ed. Butterworth-Heinemann.
3. Mubarak, S. (2010) *Construction Project Scheduling and Control*. 2nd ed. Wiley.
4. Linnet, C. and Lowsley, S. (2016) *About Time: Delay Analysis in Construction*. RICS Books.

FS430: Delay Events

Learning outcomes: The learner will	Assessment criteria: The learner can
1. Apply and compare delay analysis methods with specific events and the limitation of each method.	1.1 Case Study: Application of as-planned vs. as-built, show the limitations of this method. 1.2 Case Study: Application of impacted as planned method, show the limitations of this method. 1.3 Case Study: Application of time impact analysis, prepare a fragnet etc. 1.4 Case Study: Application of windows AP vs. AB analysis, an observational method, use actual scenario. 1.5 Case Study: Application of collapsed as built (but for) method
2. Identify delay events from the various scenarios and case studies.	2.1 Display and understanding of how to apportion delay. 2.2 Identify concurrent delay. 2.3 Identify compensable delay. 2.4 Identify non-compensable delay.
3. Select a delay method in specific circumstances, etc. from the various scenarios and case studies.	3.1 Select appropriate delay method. 3.2 Identify start date of delay event.
4. Manage delay analysis in Primavera P6.	4.1 Analyse and update the schedules for the application of each method.

Recommended Reading

- Gibson, R. (2008). *Construction Delays: Extensions of Time and Prolongation Claims*. Taylor and Francis.
- Pickavance, K. (2010). *Delay and Disruption in Construction Contracts*. 4th ed. Sweet & Maxwell.
- Gibson, R. (2015) *A Practical Guide to Disruption and Productivity Loss on Construction and Engineering Projects*. Wiley-Blackwell.
- Caletka, A. and John Kearne, P. (2015). *Delay Analysis in Construction Contracts*. 2nd ed. Wiley-Blackwell.

FS440: Determination

Learning outcomes: The learner will	Assessment criteria: The learner can
1. Gain understanding and knowledge in scheduling practices for Risk Management.	1.1 Display types of risk in construction projects. 1.2 Comprehend schedule risk types. 1.3 Assess the importance of good planning for risk management. 1.4 Record the importance of good CPM scheduling practices for risk assessment. 1.5 Schedule risk management steps.
2. Comprehend delay damages.	2.1 Comprehend direct damages. 2.2 Comprehend indirect damages.
3. Determine critical delay.	3.1 Determine critical delay in the case study of each of the methods of analysis.
4. Schedule disruption and mitigation.	4.1 Comprehend directed acceleration. 4.2 Identify constructive acceleration.

Recommended Reading

1. American Society of Civil Engineers. (2017). *Schedule Delay Analysis Standard*. ASCE.
2. Burr, A. (2017). *Delay and Disruption in Construction Contracts*. 5th ed. Informa Law from Routledge.
3. Project Management Institute. (2009). *Practice Standard for Project Risk Management*. PMI.