Course Specification

Course Summary Information		
1	**Course Title**	MSc Digital Construction
2	**Course Code**	PT1518
3	**Awarding Institution**	Birmingham City University
4	**Teaching Institution(s)** (if different from point 3)	
5	**Professional Statutory or Regulatory Body (PSRB) accreditation** (if applicable)	

6	**Course Description**

The MSc in Digital Construction course is designed in response to the growth of digitalisation in the built environment, to produce pioneers who can lead and apply digital innovation to the construction industry. This new course is aimed at:

- Provide you with a comprehensive portfolio of creative, professional and practice-based education.
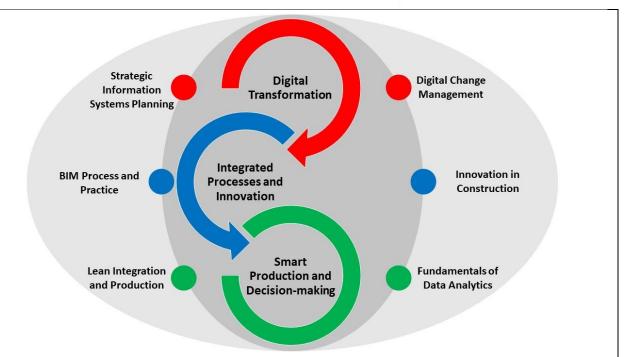- Help you to secure employment and career enhancement, further study and career enhancement.

The course design has been influenced by the rapid development in automated processes that support different aspects within the built environment, as well as the continual demand of the commercial sector for strategies that support effective technological transformation. Improving digital competencies amongst different professionals at technical, operational and managerial levels across the built environment sector is becoming vital. With the continual technological evolution of this sector, the demand for graduates who can advance the use of data / information is on the rise, especially with many emerging potentials resulting from applying areas of knowledge such as techniques from big data analytics, block-chain and information system management strategies. We anticipate that both professionals and graduates are motivated and capable in terms of both academic ability and real-world understanding to study this course.

MSc Digital Construction is a cognate course, which means that it is designed for graduates from different educational backgrounds including built environment, engineering, manufacturing, and computer science industry professionals. This goes hand-in-hand with the applied nature of the taught modules, which contextualise theory and practical exercises into areas where we have considerable expertise, e.g. BIM, information systems and computer science.

What's covered in the course?

The MSc Digital Construction is built on five main areas of knowledge: Digital Transformation, Integrated Processes, Innovation, Smart Production and Decision-making.

Digital Transformation: Through Information System lenses, we will provide you with knowledge and understanding on role of Information Systems and Technology within organisations, shedding light on a range of techniques that support formulating an effective strategy for digital transformation.

Integrated Processes: Reflecting on best practice of employing integrated processes across the different built environment disciplines, we will build your knowledge and practice of using Building Information Modelling (BIM) as one of the integrated processes on real-life projects.

Innovation: Extending on integrated processes, you will be exposed to different innovative solutions that can be applied during and after building delivery, and how they can be used to improve overall building performance and management.

Smart Production: With the continual evolvement of engineering processes within the construction industry, we cover knowledge and understanding about different approaches primarily through lean principles toward achieving smart production.

Decision-making: As the integration of technology-based solutions within the built environment expands, the value of understanding data/information in informing different decisions across the whole lifecycle is becoming inevitable. Through interdisciplinary expertise, we will provide you with an insight into different computing-based areas to equip you with robust knowledge on synthesis of the data to optimise different aspects within the built environment.

7	Course Awards		
7a	**Name of Final Award**	**Level**	**Credits Awarded**
	Master of Science Digital Construction	7	180
	Master of Science Digital Construction with Professional Placement Year	7	240
7b	**Exit Awards and Credits Awarded**		
	Postgraduate Certificate Digital Construction	7	60
	Postgraduate Diploma Digital Construction	7	120

8	Derogation from the University Regulations
	Not applicable

9	Delivery Patterns			
Mode(s) of Study	**Location(s) of Study**	**Duration of Study**		**Code(s)**
Full Time September	City Centre	12 months		PT1518
Part Time September	City Centre	24 months		PT1519
Full Time January	City Centre	12 months		PT1518
Part Time January	City Centre	24 months		PT1519
Full Time September with Professional Placement Year	City Centre (and placement provider)	18 months		PT1522
Full Time January with Professional Placement Year	City Centre (and placement provider)	18 months		PT1522

10	Entry Requirements	
	Home:	Undergraduate degree from one of the following disciplines: Built Environment, Engineering or Computer Science
	EU:	EU Students need to obtain 6.0 in IELTS
	International:	International Students need to obtain 6.0 in IELTS

11	Course Aims
	The new course of MSc in Digital Construction aims to provide a platform for built environment professionals to improve or further develop their digital competency, awareness and practical skills that support them to cope with the ever changing technological advancements. The course also acts as a bridge for those coming from other educational backgrounds and particularly computer science and are interested to join the digital built environment world.

12	**Course Learning Outcomes (LOs)**
1	Critically identify and discuss complex issues within new and existing built developments.
2	Critically appraise the mechanisms to adopt and implement digital tools / techniques in the built environment.
3	Critically explain the processes and practices of integrated project delivery using common data environments.
4	Analyse the strategies of digital transformation within organisations.
5	Analyse the application of digital tools/techniques across the lifecycle of the built environment.
6	Analyse the deployment and value of computing-led knowledge and techniques in the built environment.
7	Evaluate the strategies and applications utilised in enabling digital integration within the lifecycle of the built environment.
8	Apply lean thinking and practices to organisations / projects in the built environment.
9	Apply the use of common data environments in solving complex issues in the built environment
10	Critically formulate appropriate information system strategies to aid the process of digital transformation.
11	Apply the appropriate use of digital tools / techniques to solve problems in the built environment.
12	Apply appropriate digital transformation strategies to allow organisations to be more agile in the built environment.
13	Synthesise and apply advanced computing techniques to different scenarios in the built environment.
14	Apply research and advanced scholarship skills to inquire into the impact of digital tools / techniques within the built environment.

13	**Level Learning Outcomes**
	<u>Knowledge and Understanding</u> For you to achieve a **PG Cert Digital Construction,** you should be able to at least meet three of the following learning outcomes: LO1. Critically identify and discuss complex issues within new and existing built developments. LO2. Critically appraise the mechanisms to adopt and implement digital tools / techniques in the built environment. LO3. Critically explain the processes and practices of integrated project delivery using common data environments. LO4. Analyse the strategies of digital transformation within organisations. LO5. Analyse the application of digital tools/techniques across the lifecycle of the built environment. LO6. Analyse the deployment and value of computing-led knowledge and techniques in the built environment. For you to achieve a **PG Dip Digital Construction,** you should meet all the above learning outcomes. In addition to LOs 1-6 above, award holders of the **MSc Digital Construction** will also be able to: LO7. Evaluate the strategies and applications utilised in enabling digital integration within the lifecycle of the built environment.

Skills and Abilities

For you to achieve a **PG Cert Digital Construction,** you should be able to at least meet three of the following learning outcomes:

LO8. Apply lean thinking and practices to organisations / projects in the built environment.
LO9. Apply the use of common data environments in solving complex issues in the built environment.
LO10. Critically formulate appropriate information system strategies to aid the process of digital transformation.
LO11. Apply the appropriate use of digital tools / techniques to solve problems in the built environment.
LO12. Apply appropriate digital transformation strategies to allow organisations to be more agile in the built environment.
LO13. Synthesise and apply advanced computing techniques to different scenarios in the built environment.

For you to achieve a **PG Dip Digital Construction,** you should meet all the above learning outcomes (1-6 and 8-13).

In addition to LOs 8-13 above, award holders of the **MSc Digital Construction** will also be able to:

LO14. Apply research and advanced scholarly skills to critically discuss the impact of digital integration in the built environment.

14	**Course Learning, Teaching and Assessment Strategy**
	The learning strategy includes a range of tutorials, seminars and workshops that are designed to provide you with the best learning experience. The course includes a variety of assessments including reports, presentations and practical-based assessments. The assessments can also take the form of an individual or group work depending on nature of the module and the learning outcomes that need to be satisfied. You will utilise Autodesk software applications to illustrate many of the practical-based aspects of the work, and benefit from our status as Autodesk Training Centre where you can get access to free training on the use of Revit Autodesk Software.

15	**Course Requirements**

15a	Level 7:

In order to complete this course a student must successfully complete all the following CORE modules (totalling 180 credits):

Module Code	Module Name	Credit Value
BNV7149	Innovation in Construction	20
BNV7213	BIM Process and Practice	20
BNV7214	Lean Integration and Production	20
BNV7215	Fundamentals of Data Analytics	20
CMP7211	Digital Change Management	20
CMP7212	Strategic Information Systems Planning	20
BNV7200	Individual Master's Project	60

In order to qualify for the award of MSc Digital Construction with Professional Placement, a student must successfully complete all of the Level 7 modules listed above as well as the following Level 6 module:

Module Code	Module Name	Credit Value
PLA6004	Professional Placement	60

15b	Structure Diagram

Full-time, and DL FT mode (September and January intake)

1st Semester	Lean Integration and Production (20 credits)	Innovation in Construction (20 credits)	Fundamentals of Data Analytics (20 credits)	Individual Master's Project (60 credits)
2nd Semester	Strategic Information Systems Planning (20 credits)	BIM Process and Practice (20 credits)	Digital Change Management (20 credits)	
3rd Semester				

Professional Placement September Full Time

Year 1 1st Semester (Sept – Dec)	Lean Integration and Production (20 credits)	Innovation in Construction (20 credits)	Fundamentals of Data Analytics (20 credits)
Year 1 2nd Semester (Jan – May)	Strategic Information Systems Planning (20 credits)	BIM Process and Practice (20 credits)	Digital Change Management (20 credits)
Year 1 3rd Semester (May- Sept)	Individual Master's Project (60 credits)		
Year 2 2nd Semester (Sept - Jan)	Professional Placement (60 credits)		

Professional Placement January Full Time

Year 1 1st Semester (Jan – May)	Lean Integration and Production (20 credits)	Innovation in Construction (20 credits)	Fundamentals of Data Analytics (20 credits)
Year 1 2nd Semester (June - Sept)	Strategic Information Systems Planning (20 credits)	BIM Process and Practice (20 credits)	Digital Change Management (20 credits)
Year 1 3rd Semester (Sept - Jan)	Individual Master's Project (60 credits)		
Year 2 2nd Semester (Jan – May)	Professional Placement (60 credits)		

Part-time and DL PT mode (September and January intake)

1st Semester	-	Lean Integration and Production (20 credits)	Fundamentals of Data Analytics (20 credits)	
2nd Semester	Strategic Information Systems Planning (20 credits)	-		
3rd Semester	-	-	Innovation in Construction (20 credits)	Individual Master's Project (60 credits)
4th Semester	BIM Process and Practice (20 credits)	Digital Change Management (20 credits)	-	

16	Overall Student Workload and Balance of Assessment

Overall student *workload* consists of class contact hours, independent learning and assessment activity, with each credit taken equating to a total study time of around 10 hours. While actual contact hours may depend on the optional modules selected, the following information gives an indication of how much time students will need to allocate to different activities at each level of the course.

- *Scheduled Learning* includes lectures, practical classes and workshops, contact time specified in timetable
- *Directed Learning* includes placements, work-based learning, external visits, on-line activity, Graduate+, peer learning
- *Private Study* includes preparation for exams

The *balance of assessment* by mode of assessment (e.g. coursework, exam and in-person) depends to some extent on the optional modules chosen by students. The approximate percentage of the course assessed by coursework, exam and in-person is shown below.

Level 7

Workload

17% time spent in timetabled teaching and learning activity

Activity	Number of Hours
Scheduled Learning	300
Directed Learning	370
Private Study	1130
Total Hours	1800

Balance of Assessment

Assessment Mode	Percentage
Coursework	80%
Exam	0
In-Person	20%