Unit 91: Large-scale Working

Unit code: R/502/4984

QCF Level 3: BTEC National

Credit value: 10

Guided learning hours: 60

Aim and purpose

This unit aims to develop learners' skills in large-scale spatial working. In researching and developing ideas for specialist briefs, learners will explore and experiment with the manipulation of space in areas such as architecture and interior design, environmental design, exhibition and display design, urban design and landscape design.

Unit introduction

When developing and realising spatial design ideas it is important that artists and designers understand the relationships between the natural and the built environment, their users and uses. Their ideas are communicated through combinations of 2D and 3D work that convey stylistic intent and also demonstrate awareness of social, political and economic factors.

Tutors should engage learners in analysing the characteristics of architectural, urban and natural space, and their historical and contemporary relationships with human interaction. This unit offers opportunities to develop and present spatial design ideas through 2D design work as well as actual and virtual model making.

Learners will develop the necessary research and analysis skills, synthesis and time management skills, as well as teamwork and organisational competency. Learners will be introduced to the design development cycle and its application to specific project briefs.

Learners will be made aware of any relevant legal constraints such as building regulations and health and safety issues associated with specific materials, techniques and practices.

Briefs should be designed with stimulating, engaging and realistic intentions that mirror the realities of actual commission scenarios. Where possible, tutors should engage learners on projects that deal with actual, accessible spaces to stimulate exploration and the development of feasible outcomes.

Learning outcomes

On completion of this unit a learner should:

1 Know about the characteristics of the natural and built environments

2 Be able to modify and manipulate spaces to meet design intentions

3 Be able to generate and develop ideas for environmental spaces

4 Understand ideas for environmental spaces.

Unit content

1 Know about the characteristics of the natural and built environments

Investigate: utilisation eg space, inhabitants; occupants eg resident, transient; traffic eg times of day, week; historical information; measuring; mapping; recording eg sound, moving images, photographs; comparisons; contrasts; architectural spaces eg social, political, economic, functions, historical, contemporary

Characteristics: physical characteristics eg function, form, scale, volume, atmosphere, natural light, artificial light, interior, exterior; aesthetic characteristics eg sounds, colours, style; relationships eg adjoining spaces, users, occupiers, surrounding structures

2 Be able to modify and manipulate spaces to meet design intentions

Modify and manipulate: alterations eg materials, colour scheme, adding, removing, sub-divisions (walls, fences, surface levels); lighting; functionality eg multi-functional, multi-purpose, facilities, activities; boundaries eg defining, disguising, thresholds

Design intentions: requirements eg self-identified, client initiated, needs; function eg regeneration, additional, change, public use, private use, expansion, contraction, traffic flow, noise reduction; identity eg corporate, regional, national, restyling, specific users

3 Be able to generate and develop ideas for environmental spaces

Generate: respond eg client consultation, design briefs, commissions; identify eg initial ideas, specific problems, generic problems, opportunities, mind map, projections, predictions, trends, material manipulation, free-form thinking

Develop: plan eg working drawings, technical, site surveys, scale models, modifications, issues, test ideas, suggest alterations; consultation eg clients, end users, interested parties, community

4 Understand ideas for environmental spaces

Review: effectiveness eg time management, design development, outcome(s), brief, strengths, weaknesses, problems, solutions

Present ideas: 2D visuals eg CAD, hand rendered, scale, perspective, conceptual drawings; 3D models eg physical, computer generated, scale, concept, expressive models; written eg analysis, evaluation, specifications, spatial requirements

Assessment and grading criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria for a pass grade describe the level of achievement required to pass this unit.

Assessment and grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	**To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:**	**To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:**
P1 describe the characteristics of the natural and built environments [IE, CT, RL, TW, SM, EP]	**M1** demonstrate awareness and knowledge of the social, political and commercial relationships with environmental spaces and their modification and manipulation	**D1** demonstrate independence and imagination in the production and presentation of innovative and exciting designs for architectural spaces.
P2 modify and manipulate spaces to meet design intentions [IE, CT, RL, SM]	**M2** use well-organised ideas and coherent analysis effectively to inform individual and effective designs.	
P3 generate and develop ideas for environmental spaces [IE, CT, SM		
P4 review ideas for environmental spaces. [IE, CT, RL, TW, SM, EP]		

PLTS: This summary references where applicable, in the square brackets, the elements of the personal, learning and thinking skills applicable in the pass criteria. It identifies opportunities for learners to demonstrate effective application of the referenced elements of the skills.

Key	IE – independent enquirers	RL – reflective learners	SM – self-managers
	CT – creative thinkers	TW – team workers	EP – effective participators

Essential guidance for tutors

Delivery

This unit aims to develop learners' skills in large-scale spatial working. In researching and developing ideas for specialist briefs, learners will explore and experiment with the manipulation of space in areas such as architecture and interior design, environmental design, exhibition and display design, urban design and landscape design.

This unit offers opportunities in a wide range of design areas. Tutors should present learners with realistic, professional briefs or scenarios to stimulate exciting, realistic and creative work. It is important to ensure that learners have a sound grasp of the basic principles and practices which underpin 3D design work for environmental spaces. In particular, they must develop the ability to conceptualise spatial designs and to convert ideas expressed in 2D into an appropriate 3D form. Model making is likely to play a significant part in this process but there should be some opportunity to work with actual large-scale spaces.

This unit is closely related to *Large-scale Design* and it may be taught either within a double-unit integrated programme or in sequence. Understanding professional practice is important and every opportunity should be taken to introduce learners to relevant industrial and commercial situations. It is particularly important to engage learners with work 'on location', and finding suitable sites should be a priority in course planning.

Learners should be instructed and encouraged to keep detailed records of experimental and investigative work in collated files/sketchbooks. Since actual-size practical work may not be feasible it is anticipated that there will be an emphasis on 2D design work, maquette and model making. Some experimental work may be ephemeral and tutors should anticipate keeping notes of significant events, which could provide evidence for assessment.

Learners need to be taught how to analyse and evaluate their work critically, and the effectiveness of their decisions and design proposals, in order to achieve effective outcomes. It is also essential that learners are familiar with the specific requirements of presenting design ideas for architectural space.

Learning outcomes 1 and 2 deal with historic and contemporary theory and practice related to creating and manipulating the natural and built environments. Tutors should encourage learners to study human action and interaction with public and private spaces. Tutors might structure a range of activities for learners to fully investigate and understand the specific characteristics that relate to environmental space design, before initiating and developing design solutions.

Learning outcome 3 covers generating and developing design proposals and solutions in response to investigation, recording initial ideas, development of ideas through exploration and discussion with other parties, and the alteration and improvement processes used in response to these.

Learning outcome 4 requires learners to present their design ideas in a range of formats, as appropriate. Learners should be taught and encouraged to question their own and others' outcomes at all stages. They might test, develop and present their outcomes using 2D and 3D methods such as technical and creative drawing, computer-generated and traditional architectural models and maquettes. Learners should be encouraged to explore varied approaches to presenting their design ideas in order to recognise the needs of different audiences or clients.

Outline learning plan

The outline learning plan has been included in this unit as guidance and can be used in conjunction with the programme of suggested assignments.

The outline learning plan demonstrates one way in planning the delivery and assessment of this unit.

Topic and suggested assignments/activities and/assessment
Introduction to the brief/explore aims and requirements of the unit. **Assignment 1:** Presentation, Discussion – whole group-brief focus. A living pod – designing an environment • Primary sources for investigation – such as nests, cocoons, tents, caves etc • Contextual references • Practical considerations, constraints and factors – materials, time etc • Carry out research into the utilisation of the space by inhabitants • Explore the physical characteristics and qualities of a selected range of spaces • Create a report on your research findings.
Assignment 2: Investigation Learners investigate and explore appropriate factors, eg: • Investigating natural habitat, innate behaviour, predators, ideal temperature and space requirements • Suitability – durability, protective issues, easy cleaning • Investigating aesthetics – elements of function and appearance • Possible visit to a design gallery or visit by professional practitioner • Analysing different large-scale workings by professional practitioners and illustrate their different modifications and characteristics • Reviewing research findings and comparing effectiveness of different designs • Investigating a range of appropriate materials techniques and processes and evaluating potential use and suitability of appropriate materials • Examining ways that spaces might be modified and manipulated across a range of large-scale working ideas, appropriate to the brief, and recording test results and prototype developments. Group critical review and self-appraisal. Learner-initiated private study time.
Assignment 3: Presentation – interim evaluation and assessment Learner presentations to the group: • Considering presentation method using the most appropriate techniques and illustrations • Selecting and preparing annotated roughs and studies showing exploration of body shapes, ergonomic factors and seating positions • Preparing and collating annotated worksheets AND, design sheets • Summarising work researched and collected for appropriate contextual references. Learner-initiated private study time.

Topic and suggested assignments/activities and/assessment
Assignment 4: Development of the Learner-designed Chair Brief • Using research, explorations and feedback from Assignments 1, 2 and 3, and negotiating a personal brief with detailed planning. • Respond to client consultation and generating ideas using a range of appropriate working methods. • Identifying initial ideas to address specific or generic problems and opportunities. • Use working and technical drawing, site surveys, creative and scale models to inform developing ideas. • Creating a series of designs viewed from different angles using digital processes. • Exploring and experimenting with a range of appropriate materials. • Producing a range of studies, prototypes, models/maquettes to communicate ideas. • Modifying and refining design ideas – using digital software programmes for 3D drawing systems and 4D developments. • Researching further contextual references to inform and inspire ongoing work. Learner-initiated private study time.
Assignment 5: Selection and Development of Final Design • Reviewing and evaluating developmental studies and effectiveness of individual elements of the project. • Identifying, selecting and developing final idea using appropriate working methods and techniques. • Selecting, modifying, adapting and refining ideas for a final large-scale working model. • Analysing, reviewing and refining working processes in the use of media and techniques. • Completing final work. Learner-initiated private study time.
Assignment 6: Final Presentation or Display/Exhibition of Work • Evaluating whole project. • Identifying appropriate presentations for target audiences. • Researching and selecting a range of professional presentation methods. • Planning and creating a presentation of the work as a whole. Present appropriately to different audiences. Learner-initiated private study time. Unit review and assessment.

Assessment

For P1, learners will need to carry out investigations into the characteristics of generic and specific architectural spaces. They will need to record the results of these investigations in an appropriate format. Assessment evidence for P1 should come from practical and academic activities and include written and visual records as well as witness statements or video evidence of activities such as on-site surveys etc.

P2 provides a bridge between P1 and P3 and requires learners to demonstrate their understanding of how factors can be manipulated to achieve design intentions. Learners may use theoretical and empirical approaches. Assessment evidence may come from written notes, theoretical modelling, scale models, mock-ups and concept visuals.

P3 is concerned with the design development process and requires learners to demonstrate their ability to generate initial ideas and develop these to creative outcomes. As well as studio-based evidence, such as sketchbooks, concept and scale models, and design development sheets, installations and on-site testing of ideas may also present recordable evidence. Ideas will be basic with tutor input.

P4 requires learners to review and present their ideas. Evidence should come from a variety of sources such as written and recorded verbal analyses and presentations to different audiences, using 2D visuals and 3D models.

For M1, learners should be able to demonstrate their awareness and understanding of how of society, politics and economics influence the modification and manipulation of architectural space and vice versa.

M2 requires learners to use the results of their research and analysis of actual contemporary and historical space to inform and influence creative and imaginative outcomes. The evidence produced should clearly demonstrate direct links and influences between learner investigations and understanding of architectural space and their ideas and outcomes. Evidence for the merit criteria would come from the same range of sources as for P1, P2 and P3.

For D1, learners need to present stimulating and innovative ideas and outcomes supported by a comprehensive body of research and development work. Learners will have largely worked independently and have shown independence and creativity in the creation and presentation of their design ideas and outcomes.

Assessment evidence will come from all areas of learners' work and formats would be similar to those for pass and merit level. Witness statements should only be accepted from individuals with relevant specialist knowledge of the specific skills or subject area.

Programme of suggested assignments

The table below shows a programme of suggested assignments that cover the pass, merit and distinction criteria in the assessment and grading grid. This is for guidance and it is recommended that centres either write their own assignments or adapt any Edexcel assignments to meet local needs and resources.

Criteria covered	Assignment title	Scenario	Assessment method
P1, P2, P3, P4 M1, M2 D1	Assignment brief to research and develop ideas for a fine art piece of work inspired by the theme A living pod. **Assignment 1**: Presentation, Discussion **Assignment 2**: Investigation **Assignment 3**: Interim Presentation **Assignment 4**: Development **Assignment 5**: Final Design **Assignment 6**: Final Presentation/ Display	A sculptor is commissioned to produce a project proposal, maquettes and first stage models for sculptures as part of a new terminal building for a local airport.	Portfolio of evidence consisting of: • research • development of ideas such as experiments with materials, techniques relevant to proposal • final piece including presentation sheets • evaluation such as development and analysis of large-scale working ideas and final piece, strengths and weaknesses of ideas and final piece. Assessment methods might include the following: 1 Using witness statements to: • observe and record learner activity and their progress while working • record learner discussions with groups and ability to communicate at tutorials • observe and record learner presentations 2 Reports of progress from work experience placements 3 Learner's own ongoing review of progress and self-evaluation evidenced through statements, notes and annotated sketchbooks/worksheets 4 Evidence of visual studies from portfolio of ongoing and final work.

Links to National Occupational Standards, other BTEC units, other BTEC qualifications and other relevant units and qualifications

This unit forms part of the BTEC Art and Design sector suite. This unit has particular links with the following unit titles in the BTEC Art and Design suite:

Level 1	Level 2	Level 3
Explore 3D Design	3D Visual Communication	Large-scale Design
Creative Use of Materials, Techniques and Processes	Using Ideas to Explore, Develop and Produce Art and Design	Visual Recording in Art and Design
	Working with 3D Design Briefs	Materials, Techniques and Processes in Art and Design
	Working with 3D Design Crafts Briefs	Design Methods in Art and Design
		Exploring Resistant Materials

National Occupational Standards

This unit also provides development opportunities for some of the underpinning skills, knowledge and understanding of the following National Occupational Standards:

CCSkills Sector Skills Council

Design (revisions in draft form June 2009)

- DES1 Apply research on the history and theory of design to your own design activities
- DES2 Apply design industry knowledge to inform your own design work practice and work
- DES4 Communicate the importance of the design brief
- DES5 Follow a design process
- DES6 Work effectively with others in a creative environment
- DES7 Contribute to the production of prototypes, models, mock-ups, samples or test pieces
- DES9 Research, test and apply techniques for the design of products
- DES10 Create visual designs
- DES11 Provide written information in relation to your design work
- DES12 Make a presentation
- DES18 Interpret the design brief and follow the design process
- DES23 Create 2D Designs using a Computer Aided Design System
- DES24 Create 3D Models using a Computer Aided Design System
- DES38 Manage design realisation
- DES39 Manage a design project.

Essential resources

Learners will need access to a range of visual and technical resources including photographic facilities. Workshops should be equipped to a good standard for working with a wide range of materials and equipment for model making and prototyping. Suitable studio facilities should also be available for clean work, drawing, preparation and computer modelling.

Resources for research will be essential and should include access to design areas and drawing studios for recording from primary sources, ideas origination and for project development. Both specialist and general learning support materials including books, journals, periodicals, access to the internet, together with a range of design software, are necessary to support learners in their historical, cultural and contemporary contextual research and in their use of 4D design application.

Employer engagement and vocational contexts

Centres should develop links with practising artists, craftspeople and designers, to deliver assignments to learners or to provide work experience.

Centres forming compacts with universities to provide progression routes will also give learners greater opportunity to pursue and develop their art and design careers through appropriate higher education courses.

Links with employers are essential to delivery of the programme in terms of work experience and future employment.

Vocational learning support resource include:

- Learning and Skills Network – www.vocationallearning.org.uk

Business and finance advice:

- local and regional Business Link – www.businesslink.gov.uk

Assignments should be vocationally relevant. Centres should consider the delivery of 'live projects' to support the vocational content of the unit and programme.

Creative and Cultural Skills (www.ccskills.org.uk), the sector skills council for arts, crafts and design have launched the web portal Creative Choices (www.creative-choices.co.uk). This portal has a range of information about careers in the arts, crafts and design sector, including job descriptions.

Indicative reading for learners

Textbooks

Armengaud J – *The Practical Draughtsman's Book of Industrial Design, and Machinist's and Engineer's Drawing Companion* (Scholarly Publishing Office, University of Michigan Library, 2006) ISBN 978-1425530471

Feill C and P – *Design of the 20th Century* (Taschen, 2005) ISBN 978-3822840788

Feill C and P – *Designing the 21st Century* (Taschen, 2005) ISBN 978-3822848029

Grillo P – *Form, Function and Design* (Dover Publications, 1975) ISBN 978-0486201825

Huygen F – *British Design: Image and Identity* (Thames & Hudson, 1989) ISBN 978-0500275580

Jacobs J – *The Death and Life of Great American Cities* (Penguin Books, 2002) ISBN 978-0375508738

Lesko J – *Industrial Design, Materials and Manufacturing Guide* (John Wiley, 2008) ISBN 978-0470055380

Lidwell W – *Universal Principles of Design: 100 Ways to Enhance Usability, Influence Perception, Increase Appeal, Make Better Decisions and Teach Through Design* (Rockfort Publishers Inc, 2003) ISBN 978-1592530076

McDermott C – *Essential Design* (Bloomsbury, 1994) ISBN 978-0747519362

Mills J W – *The Techniques of Sculpture* (Batsford, 1985) ISBN 978-0713425093

Mitton M – *Interior design visual presentation* (John Wiley, 2008) ISBN 978-0471741565

Moss E – *Revit 4.5 Basics: Architectural Modelling and Documentation* (Schroff Development Corporation, 2002) ISBN 978-1585030996

Neumann D – *Film Architecture: Set Designs from Metropolis to Bladerunner* (Prestel Verlag, 2000) ISBN 978-3791321639

Norman D A – *Emotional Design* (Basic Books, 2005) ISBN 978-0465051366

Norman D A – *The Design of Everyday Things* (Basic Books, 1998) ISBN 978-026264037

Norman D A – *The Design of Future Things* (Basic Books, 2007) ISBN 978-046500227

Poyner R – *Nigel Coates – The City in Motion* (London, Fourth Estate, 1989) ISBN 978-0947795740

Ramirez J A – *Architecture for the Screen: a Critical Study of Set Design in Hollywood's Golden Age* (McFarland, 2004) ISBN 978-0786417810

Slack L – *What is product design? Essential design handbooks* (RotoVision, 2006) ISBN 978-2940361243

Tschumi B – *Architecture and Disjunction* (MIT Press, 1996) ISBN 978-0262700603

Weizhi C – *Big Book of Creative Product Design* (Links International 2008) ISBN 978-8496969254

Journals

AN Magazine

Blueprint

Crafts

Creative Review

Design

Design issues

Eco Designer

Make

Nest

Schmuck

Space

World of Interiors

Websites

www.antonygormley.com	dedicated to the artist
www.axisweb.org	online resource for contemporary art
www.hse.gov.uk	information about health and safety at work
www.designcouncil.org.uk	the National strategic body for design
www.drewapenaar.nl	Rotterdam based studio specialising in canvas-based large scale work
www.eyemagazine.com	Eye magazine
www.intute.ac.uk/artsandhumanities/visual	web resources for research
www.lauraellenbacon.com	artist creating willow sculptures
www.tate.org.uk	Tate gallery
www.tokujin.com	shop designs and installations by Tokujin Yoshioka
www.vam.ac.uk	Victoria and Albert museum

Delivery of personal, learning and thinking skills

The table below identifies the opportunities for personal, learning and thinking skills (PLTS) that have been included within the pass assessment criteria of this unit.

Skill	When learners are ...
Independent enquirers	investigating the characteristics of the natural and built environments modifying and manipulating spaces to meet design intentions generating and developing creative ideas for environmental spaces analysing and presenting ideas for environmental spaces
Creative thinkers	investigating the characteristics of the natural and built environments modifying and manipulating spaces to meet design intentions generating and developing creative ideas for environmental spaces analysing and presenting ideas for environmental spaces
Reflective learners	investigating the characteristics of the natural and built environments modifying and manipulating spaces to meet design intentions analysing and presenting ideas for environmental spaces
Team workers	investigating the characteristics of the natural and built environments analysing and presenting ideas for environmental spaces
Self-managers	investigating the characteristics of the natural and built environments modifying and manipulating spaces to meet design intentions generating and developing creative ideas for environmental spaces analysing and presenting ideas for environmental spaces
Effective participators	investigating the characteristics of the natural and built environments.

Although PLTS are identified within this unit as an inherent part of the assessment criteria, there are further opportunities to develop a range of PLTS through various approaches to teaching and learning.

Skill	When learners are ...
Independent enquirers	researching the brief and selecting contexts and sources for recording; originating and developing large-scale working ideas; reviewing and refining ideas towards completed work planning and preparing presentations of final work
Creative thinkers	recording from sources and contexts in different creative ways using media, materials and processes imaginatively originating and developing creative ideas working on final pieces presenting work to different audiences creatively and imaginatively
Reflective learners	evaluating the different stages of project development reviewing ideas and listening to feedback at tutorials and critique sessions carrying out a final evaluation when presenting large-scale working ideas to different audiences
Team workers	working with the group to analyse the brief and develop plans for research and ideas for development participating group evaluations and feedback sessions working on final displays or exhibitions and presentations
Self-managers	working independently to further their research studies planning the development of their work to meet the project brief developing ideas and reviewing their progress regularly selecting best ideas and deciding on ways forward planning and preparing presentations
Effective participators	participating in group discussions and evaluations working on group projects taking part in presentations.

Functional Skills – Level 2

Skill	When learners are ...
ICT – Use ICT systems	
Select, interact with and use ICT systems independently for a complex task to meet a variety of needs	scanning and developing large-scale working ideas digitally using software programmes to develop image creation researching contextual and other information for the development of ideas for large-scale working brief
Use ICT to effectively plan work and evaluate the effectiveness of the ICT system they have used	planning project briefs and where and how ICT might be used evaluating outcomes and the appropriateness of medium
Manage information storage to enable efficient retrieval	researching from internet sources, downloading information, creating folders for storage and retrieval
Follow and understand the need for safety and security practices	induction into use and practice of ICT
ICT – Find and select information	
Select and use a variety of sources of information independently for a complex task	researching internet sources, selecting from their research, and developing own response informed by research
Access, search for, select and use ICT-based information and evaluate its fitness for purpose	researching information for different briefs and activities evaluating results of using digital research methods
ICT – Develop, present and communicate information	
Enter, develop and format information independently to suit its meaning and purpose including: • text and tables • images • numbers • records	designing digitally, using scanners, inputting and formatting information from sources
Bring together information to suit content and purpose	developing design ideas digitally, importing visual and textual information relevant to brief/activity
Present information in ways that are fit for purpose and audience	using digital means to plan, create and give presentations to different audiences
Evaluate the selection and use of ICT tools and facilities used to present information	assessing their progress and commenting on the appropriateness of their selection of ICT tools and facilities eg use of software programmes
Select and use ICT to communicate and exchange information safely, responsibly and effectively including storage of messages and contact lists	using email to submit written work; downloading information from internet sources; storing of information – creating folders for access

Skill	When learners are ...
Mathematics	
Understand routine and non-routine problems in a wide range of familiar and unfamiliar contexts and situations	recording visually, scaling, timing, measuring using perspective and other methods of projection
Identify the situation or problem and the mathematical methods needed to tackle it	using measuring and orthographic projection for accuracy, and scaling using software to observe and modify large-scale working ideas from different viewpoints
English	
Speaking and listening – make a range of contributions to discussions and make effective presentations in a wide range of contexts	discussing the project brief describing the physical properties and characteristics of different large-scale working materials contributing to group discussions and the sharing of ideas evaluating own and others' large-scale working presenting to target audiences
Reading – compare, select, read and understand texts and use them to gather information, ideas, arguments and opinions	researching, reading, selecting text and images annotating, commenting and comparing space using contextual texts and images to relate to own large-scale working ideas evidencing understanding through discussion, critique sessions, evaluations and presentations
Writing – write documents, including extended writing pieces, communicating information, ideas and opinions, effectively and persuasively	evaluating results of large-scale working to meet the brief annotating recordings and ideas to judge qualities and appropriateness in the use of selected 3D media, materials and techniques analysing and evaluating selected artists' images for the purpose of developing own work, using personal judgements and relating research to own ideas preparing presentations of final work.