University of Greater Manchester

MSC DEGREE FULL TIME COURSE

MSc Dentofacial Orthodontics and Clear Aligners

QUEENS DENTAL SCIENCES CENTER

About the Course

Programme Brief

The programme delivers a robust foundation in conventional orthodontic principles, mastery of clear aligner technologies, and invaluable clinical experience. By blending theoretical coursework with hands-on clinical training under expert guidance, it fosters the development of specialist orthodontists able to meet the evolving needs of patients and advances in the application of artificial intelligence. The field of orthodontics has witnessed transformative digital advancements, particularly with the emergence of artificial and clear aligner therapies. This full-time clinical MSc programme is designed to equip professionals with the knowledge and practical skills essential for mastering both conventional and modern orthodontic practices. It provides comprehensive training in digital therapies alongside conventional foundational fixed orthodontic and removable principles.

Course Overview

The structure encompasses a blend of theoretical coursework, hands-on training, and clinical practice on actual patients. Core subjects include advanced orthodontic principles and digital technologies, biomechanics of tooth movement, growth and development, and facial aesthetics. The integration of technology in dental practices has become crucial; thus, students gain exposure to software and tools used in treatment planning and clear aligner therapies. Course work covers essential topics such as craniofacial growth and development, biomechanics, orthodontic materials, and treatment methodologies.

The programme incorporates extensive clinical training, where students engage in direct patient care under the guidance of experienced orthodonticfaculty. During clinical training, students are exposed to a diverse patient population, presenting a range of orthodontic cases, from simple to complex malocclusions. This variety enhances their problem-solving capabilitiesand equips students with the proficiency to manage different treatmentmodalities, including fixed

appliances, removable appliances, and contemporarytechniques such as aligners.

Clinical training is meticulously structured to ensure that students gradually assume greater responsibilities, starting fromobservation quickly progressing to active participation in treatments in the second semester of the first year. This progressive approach not only builds confidence but also allows students to cultivate interpersonal skills vital forpatient interactions, including communication, empathy, and professionalism essential for advanced clinical practice.

Advanced Supervised Clinical Training in Orthodontics

A hallmark of the MSc programme is its supervised clinical training component, ensuring students have the invaluable opportunity to work with actual patients under the supervision of orthodontic experts. This enhances learning and ensures that students acquire practical skills in real-world scenarios. Supervised clinical sessions allow students to both observe and implement treatment plans, engage with patients, and refine their techniques in a supportive environment. Effective clinical training involves hands-on experience with different types of clearaligners, understanding the nuances of each system, and mastering the skills necessary for their application. Students learn how to evaluate each patient's unique dental structure and formulate appropriate treatment plans tailored to individual needs. Moreover, such practical exposure fosters confidence in making clinical decisions, enhancing overall competence.

Clinical training is integral to developing orthodontic competencies and the primary purpose of advanced supervised clinical training in orthodontics is to provide post graduate students with an in-depth understanding of the clinical aspects ofthe discipline. While theoretical knowledge is foundational, orthodontics is inherently a hands-on practice that requires experiential learning to develop the necessary clinical skills.Supervised training enables students to apply theoretical principles toreal-life situations, fostering clinical judgment and decision-making abilitiescritical for accurate diagnosis and effective treatment planning.

Outcomes of Advanced Supervised Training

The outcomes of advanced supervised clinical training are multifaceted and profoundly impact both the students and the patients they serve. Firstly, students emerge as competent orthodontists with a comprehensive skill set that includes thoroughdiagnostic capabilities, advanced treatment planning, and an understanding of the latest technological advancements in orthodontics, such as digital treatment planning and 3D imaging.

Importantly,the rigorous training instils a sense of ethical responsibility, emphasizingthe importance of patient-centred care. Students learn to approach treatment holistically, considering not only the clinical aspects but also the psychological and social implications of orthodontic care. This well-rounded perspective is crucial in building lasting relationships with patients and ensuring their overall satisfaction with the treatment process. Furthermore,the training lays the foundation for lifelong learning and professional development. The field of orthodontics is constantly evolving, and graduates equipped with the necessary clinical skills are better prepared to adapt to new technologies and methodologies, ensuring their continual growth within thefield.

Programme Awards

The porgrammes offer three exit options.

1. Master's Degree (MSc) Final Award: MSc Dentofacial Orthodontics and Clear Aligners
2. Postgraduate Diploma (PgDip) Exit or Fallback Award: Postgraduate Diploma Dentofacial Orthodontics and Clear Aligners
3. Postgraduate Certificate (PgCert) Exit or Fallback Award: Postgraduate Certificate Orthodontics and Clear Aligners

Aims of the Programme

The principal aims of the program are to:

- acquire coherent and detailed knowledge at the forefront of orthodontic practice, together with an understanding of the principlesand theories which underpin safe clinical practice of clear aligner therapies
- introduce concepts of occlusal assessment anddiagnosis of occlusal abnormalities
- explain occlusal aetiology, skeletal anddento-alveolar factors

- be able to integrate prior knowledge and understanding of dentistry with the development of advanced level knowledge and understanding of conventionaland digital technology to solve a range of occlusal problems
- develop an enhanced criticaland evaluative awareness of current issues within orthodontics with particular regard to digitaltreatment planning and appliances
- develop high levels ofproficiency in the application of digital treatment planning of clear aligner orthodontic cases
- develop the ability to takeresponsibility for the extension of your own learning and to exerciseindependent judgement in the investigation, analysis and evaluation of dentaltopics
- develop self-reflective skillsas well as encouraging opportunities for research and further postgraduate development
- allow you to develop acritical awareness of the use of technology in the discipline
- enable you to undertake an independent research project.

Distinctive Features of the Programme

- supervised clinical practice of orthodontics on actual patientsdelivered from the Queens Dental Sciences Centredental
- laboratory activities, digital planning, work flows and application fabrication
- provide unbiased teaching in the theory and practice of conventional fixed and Clear Aligner Orthodontics
- small group learningopportunities and access to the very latest digital Orthodontic treatment modalities
- opportunities for personal andprofessional development in the field of Orthodontics
- contribution to the researchbase of Orthodontics, encouraging research amongst practitioners
- reflective practice throughthe self-appraisal of own levels of competency

Learning Outcomes

- On completion of the programme successful students will be able to demonstrate systematic knowledge and understanding of:
- the safe practitioner framework, the range of currentlyavailable treatment modalities applicable to Dentofacial Orthodontics and ClearAligners
- evidence-based approaches tolearning, practice, clinical judgment and decision-making
- utilising criticalthinking and problem-solving skills
- how to access research and synthesize it for use as part of an evidence-based approach to practice
- the use of technology in the field of Dentofacial Orthodontics and Clear Aligners.

Cognitive, Intellectual or Thinking Skills

On completion of the programme successful students will be able to demonstrate the ability to:

- critically evaluate and analyze information to solve problems in new or unfamiliar environments
- critically evaluate treatment outcomes and provide aftercare to produce a patient centre maintenance regime
- critically analyse problems and synthesize learned knowledge and practical experience to their satisfactory solution
- synthesise and critically appraise information gained from a wide variety of sources
- synthesise acquired knowledge for the evaluation of new technologies and techniques.

Practical, Professional or subject-specific Skills

On completion of the programme successful students will be able to demonstrate the ability to:

- develop innovative solutionsprofessionally, safely and effectively, making the high-quality long-term careof patients the first concern in accordance with relevant guidelines
- critically analyse and synthesize a comprehensive patient history and maintain accurate, comprehensive, and contemporaneous patient records
- critically evaluate theimportance of each component of the patient assessment process and basedtreatment plan
- critically solve problems thatinvolve complex issues and systematically execute specific treatmentprocedures
- synthesise the full results of the patient’s assessment and make clinical judgements to formulate a differential diagnosis and reach a definitive restorative diagnosis.

Transferable, Key or Personal Skills

On completion of the programme successful students will be ableto demonstrate the ability to:

- solve complex problems withoriginality and independence when planning and implementing tasks at aprofessional level
- develop innovative solutionsto devise a treatment plan and choice of treatment modality
- critically evaluate variousdigital technologies
- systematically and creativelysolve problems, communicate, and make good use of digital technology
- synthesise knowledge anddevelop innovative solutions from a variety of medical specialties based evidence
- Clearly communicate complex ideas either verbally and/or in writing and construct coherent arguments using language appropriate to your programme of study.

Learning & Teaching Strategies

The learning and teaching methods typically used by tutors include lectures, seminars, practical classes in the dental manikin and skills laboratory, clinical training placement, workshops, and tutorials. A significant amount of personal study is expected to be undertaken by students, comprising, for example, background reading, assignment work and preparation for seminars, patient treatment planning, and dental laboratory activities. This program adopts a blended style of learning and teaching, including online delivery and engagement where appropriate.

Assessment Strategy

Students are assessed with diverse assessment methods, including group activities (group role plays), professional discussions, OSCEs, Vivas, reports, written exams, portfolios of clinical cases, PowerPoint presentations, and a dissertation. The assessments also follows those equivalent and utilised by the Royal College ofPhysicians and Surgeons intercollegiate examinations.

Support for Student Learning

- The clinical aspects of the programme are managed by the Programme Clinical Leader
- The programme is managed by a Programme Leader
- Each student has a personal tutor who is responsible for support and guidance
- The online Student Information-Policy Zone provides all regulatory and policy information in one place
- A subject specialist linktutor supports the programme
- Programme Handbooks and Module Guides provide information about the programme and university/partnerregulations
- Student representativetraining is available online from the Student Union

Programme Structure

The programme consists of seven modules: 3 x 20 credit modules, 2x 15 credit module, 1 x 30 credit module and 1 x 60 credit Dissertation module.The MSc Periodontology and Implantology requires successful completion of all.the modules to total 180 credits at level HE7.

Validated Modules

All modulecomponents reinforce one another efficiently, as the taught in-class theorysessions running in parallel with the clinical training placement, prepare thestudents appropriately for their OSCE assessment, while they also inform themwith appropriate directions they require to follow for the development of their clinical logbooks.Module learning is consolidated by applying taught in-class theory knowledge to the clinical training placement environment.

1. Multidisciplinary Patient Assessment and RiskManagement (DDT7014)
2. Three Dimension Digital Imaging Techniques, Interpretation and Technology
3. Occlusal Diagnosis and Treatment Planning
4. Digital Orthodontic Treatment Protocols (Design and Manufacture)
5. Multidisciplinary Care and Advanced Reflective Clinical Practice
6. Research Methodology
7. Dissertation

Module Outline

Multidisciplinary Patient Assessment and RiskManagement (DDT7014)

Module Overview

This module is crucial, not only for the development of clinical skills but also for the establishment of safe and ethical standards of care. The module outlined relates directly to this aim, serving as a cornerstone for students enrolled in various MSc dental programmes. Delivered in the first semester of year one, it is a prerequisite to clinical practice on patients and equips students with a comprehensive understanding of the legal and regulatory frameworks mandated by the General Dental Council (GDC) and other UK regulatory bodies. This foundational knowledge is imperative for a safe and effective transition into clinical practice. At the heart of this module is the concept of the "Safe Practitioner," established by the GDC, that encompasses various competencies essential for all dental professionals. The curriculum emphasizes the integration of patient-centred approaches, ensuring that students are not only trained to perform clinical procedures but also foster communication, empathy, and understanding towards patients.

Central to this patient management strategy is the systematic assessment and treatment planning that aims for predictable outcomes, aligning clinical practice with the expectations and safety of patients. To navigate the complexities of patient management effectively, students will study vital topics such as record and risk management. These components are critical as they lay the foundation for maintaining comprehensive patient records and identifying potential health risks associated with dental treatment. Understanding how to obtain valid patient consent forms the ethical backbone of this module, teaching students the importance of transparency and integrity in their practice.

The multifaceted nature of dental healthcare necessitates that professionals possess a thorough knowledge of various dental specialities. Each specialty is fraught with its own unique set of complications, and the module addresses the identification, management, and mitigation of these possible complications through risk assessment strategies. By recognizing potential pitfalls in treatment, students learn to develop proactive solutions aimed at minimising adverse outcomes.

The module develops behaviours that underscore the significance of self-reflective awareness and avital quality for any health practitioner. This practice of self-reflection encourages students to evaluate their actions, fostering continuous learning and improvement throughout their professional careers. Such reflective practice is essential, especially considering not being able to foresee or prevent every complication that may arise during treatment. Ethical considerations, such as the duty of candour and the management of patient expectations, are diligently covered in this module. The professional duty of candour obligates practitioners to inform patients of any errors or complications that arise, reinforcing trust and transparency in the practitioner-patient relationship.

Addressing patient expectations also cultivates a more satisfactory healthcare experience, as patients must be well-informed about potential outcomes and complications. To facilitate the practical application of this knowledge, the module allocates a significant amount of scheduled teaching time to the dental manikin laboratory. This state-of-the-art facility replicates the clinical environments that students will encounter during their clinical placements, allowing for hands-on learning and skill development in a controlled setting before real-world application. This comprehensive module not only prepares students for the multifaceted nature of clinical practice but also instills essential ethical principles and behaviors for a patient-centred approach. Emphasizing safe practice through thorough assessment and risk management strategies ensures that students are equipped to deliver high standards of care while minimising the risks associated with treatment.

Indicative Content

1. Understand the Safe Practitioner framework, domains and sub-domains
2. Development of clinical knowledge and its application to the patient combined with clinical and technical skills acquired during dental manikin training

3. Developments of treatment plans based on patient assessment, diagnostic data, prognosis,analysis of the known associated risks and shared decision-making
4. Development of Interpersonal skills, effective communication, teamwork and wellbeing ofothers
5. Understanding of professionalism, ethics and integrity, leadership and social accountability, and compliance with legal and regulatory frameworks
6. The importance of the patient assessment process from a multidisciplinary perspective
7. Psychosocial and cultural sensitivities' considerations during patients' assessment
8. The critical appraisal and assessment of a patient's suitability for multi-disciplinary treatment
9. Patient management of risks, benefits, contra-indications and indications
10. The identification and consideration of risks associated with multi-disciplinary treatmentmodalities
11. Obtaining valid patient consent / Legal requirements, ethical principles & integrity
12. Self-reflection principles and self-management insight to identify area of further personalgrowth and development
13. Development of organisation, time management and referral procedures
14. Responding to complications; poor treatment outcomes
15. Patient-centred approach / Team working

Learning Outcomes

On successful completion of this Module you will be expected to be able to:

1. Critically assess complex clinical situations and challenges systematically and creatively
2. Critically apply knowledge and understanding of patient assessment to treatment modalities todevelop a treatment plan
3. Critically evaluate clinical and environmental factors to create a comprehensive riskassessment
4. Demonstrate integrity and adherence to the Safe Practitioner framework
5. Demonstrate effectiveness in obtaining valid patient consent

Learning And Teaching Strategy

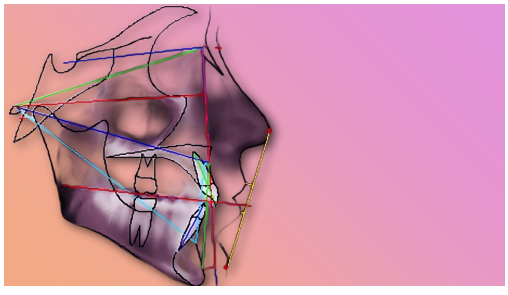
This module will be delivered through a combination of learning and teaching methods, including lectures, seminars, clinical application, practical classes in the dental manikin laboratory, and tutorials. Delivery will be supported by online discussions and activities posted on the VLE. You will be expected to attend all scheduled sessions and prepare for these in advance by undertaking relevant research and background reading.

Formative Assessment Strategy

Formative assessment is employed to support your learning on the module, allowing you to reflect on feedback on your progress from your tutors and peers. It takes a variety of forms, including group activities, discussions, and tutorial work, and does not contribute to the final module mark.

Summative Assessment Strategy

The summative assessment strategy is underpinned by two items of assessment. The first item is a group role play, which takes place early in the module delivery, while the second item is a 120-minute written examination.



Three Dimension Digital Imaging Techniques, Interpretation and Technology

Module Overview

This module explores intra- and extra-oral scanners and Cone Beam Computed Tomography and develops clinical skills in navigation, interpretation, and application of three-dimensional imaging. By understanding both the technical aspects and the

regulatory requirements associated with these technologies, students are prepared to leverage these sophisticated tools to improve patient outcomes and drive innovations in dental care. Through a series of practical training sessions and clinical practice on three-dimensional imaging systems and their underlying principles it delves deep into the underlying principles that govern their operation and application in clinical settings.

Through this module, you will learn the fundamentals of scanning technologies, their advantages, and their limitations. You will also be taught about the operating and legal requirements applicable to the safe and effective use of radiographic equipment, plus the health and safety issues related to ionising radiation. The module will develop the skills of navigation, manipulation, and interpretation of three-dimensional and two-dimensional images. Cephalometric analysis will be used to evaluate lateral skull radiographs to determine skeletal patterns and assess treatment complexity. Mastery of these skills is vital, as they form the cornerstone of effective diagnosis and treatment planning.

The introduction of intra-oral scanners facilitates the capture of high-resolution digital impressions, revolutionizing the way dental restorations are designed and fabricated. Similarly, extra-oral scanners contribute to a broader understanding of the craniofacial structure, allowing for comprehensive assessments that were previously unattainable with traditional imaging methods. Cone Beam Computed Tomography (CBCT) provides a volumetric representation of the anatomical structures, allowing students to visualize the complex arrangement of teeth, bones, and soft tissues in a singular view. This capability enhances diagnostic accuracy, informing treatment decisions for various conditions, including implant placement, orthodontic assessments, and maxillofacial pathologies.

While CBCT offers remarkable detail and reduced image distortion, it is also crucial for students to comprehend its limitations, such as the increased radiation dose compared to traditional X-rays and the potential for artefacts in certain clinical scenarios. A critical component of this module is the emphasis on operating and legal requirements associated with the use of radiographic equipment. Knowledge of guidelines and regulations ensures that practitioners operate within the legal framework, safeguarding both the patient and the provider. Furthermore, understanding the health and safety issues related to ionizing radiation is essential for minimizing risks. Students must be aware of the principles of radiation protection, including appropriate shielding, patient positioning, and exposure settings, thereby ensuring a safe working environment and compliance with health standards. This module's content is continually updated to reflect the latest developments in scanning technologies and treatment modalities that necessitate advanced radiographic analysis and assessment. As new technologies emerge, staying informed about these advancements is crucial for maintaining knowledge in the field and providing optimal patient care. The integration of cutting-edge imaging systems advances diagnostic capabilities and enhances the overall treatment experience for patients.

Indicative Content

1. The technology of 3D scanning and computerised tomography
2. Scanning and cone beam CT and spiral CT imaging technologies
3. Scanning and CBCT as part of initial assessment, treatment planning, formulation of workflows, and planned guided surgery
4. Regulatory requirements and legal aspects of CBCT5 results interpretation and report writing

Learning Outcomes

On successful completion of this Module you will be expected to be able to:

1. Critically identify and implement the most appropriate scanning or combination of scanningprotocols to the development of a treatment plan
2. Critically apply knowledge and understanding of scanning, CBCT scanning and 3D imagingtechnologies
3. Critically assess and manipulate 3D images and draw conclusions
4. Synthesise knowledge to develop an effective analysis of radiographic findings

Learning And Teaching Strategy

This module will be delivered through a combination of learning and teaching methods, including lectures, seminars, training placement, and tutorials. Delivery will be supported by online discussions and activities posted on the VLE. You will be expected to attend all scheduled sessions and prepare for these in advance by undertaking relevant research and

background reading.

Formative Assessment Strategy

Formative assessment is employed to support your learning on the module, allowing you to reflect on feedback on your progress from your tutors and peers. It takes a variety of forms, including group activities, discussions, and tutorial work, and does not contribute to the final module mark.

Summative Assessment Strategy

The summative assessment strategy is underpinned by two items of assessment. The first item is an Objective structured clinical examination (OSCE) with 2 components, while the second item is a 2000-word Report

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Occlusal Diagnosis and Treatment Planning

Module Overview

Malocclusion is a significant area of focus in orthodontics. The classification and assessment of malocclusions in orthodontics and restorative dentistry are fundamental for diagnosing dental anomalies and formulating effective treatment plans. This module explores the classification of malocclusions, their clinical manifestations, and management strategies. Students will be exposed to advances in orthodontic technology as treatment modalities continue to evolve, so that they are able to offer patients comprehensive solutions to achieve optimal oral health.

Students will carefully evaluate the clinical manifestations of malocclusions to devise effective management strategies that enhance both function and aesthetics. They will learn that malocclusions can manifest in various ways, influencing both aesthetic and functional aspects of oral health. During clinic sessions through patient interaction, students will acquire insight and understanding of how patients may experience dissatisfaction with their smile, leading to reduced self-esteem and psychosocial impacts.

Clinical evaluation of actual patients will help students assess difficulties in chewing, speaking, and maintaining oral hygiene and how misalignment of teeth can result in functional problems contributing to the wear of enamel, temporomandibular joint disorders, and increased risk of dental caries and periodontal disease. Clinical sessions will put into practice appropriate evidence-informed management strategies for malocclusions depending on the type and severity of the condition.

Orthodontic treatment modalities practiced by students during their training typically include:

Fixed appliances, traditional metal braces, ceramic braces, and lingual braces

1. Removable appliances, such as clear aligners, their design, and their application. Students will engage in laboratory sessions where they design and fabricate appliances for their own patients, consolidating their understanding of the limitations and benefits of various appliances.
2. Students will consider when orthognathic surgery is indicated in severe cases, especially in Class II and Class III malocclusions, where surgical intervention may be necessary to correct skeletal discrepancies.
3. They will select and implement retention strategies for their patients; this involves them using fixed or removable retainers.

Indicative Content

1. Occlusion and its significance to function and dental stability

2. Terminologies, skeletal and occlusal classifications
3. The anatomy of the temporomandibular joint and muscles of mastication
4. Occlusal assessment and diagnosis of occlusal abnormalities
5. The consequences of malocclusion on restorative stability, function, and oral health.
6. The diagnosis and treatment of Temporomandibular Joint Syndrome and Occlusal Parafunction
7. Management of malocclusions and dysfunction
8. Temporomandibular Joint Disorder, its a etiology, and skeletal and dento-alveolar factors
9. Development of treatment plans informed by occlusal assessment, diagnostic data, prognosis, analysis of the known associated risks and shared decision-making
10. Development of risk assessments associated with the finalised / agreed treatment plans

Learning Outcomes

1. On successful completion of this Module you will be expected to be able to:
2. Critically assess complex clinical situations and challenges in occlusal diagnosis and analysis systematically and creatively
3. Critically apply knowledge and understanding of patient assessment to occlusal treatment modalities to develop a treatment plan
4. Critically evaluate clinical and environmental factors in occlusal treatment to create a comprehensive risk assessment
5. Critically evaluate the long-term durability of the proposed restorative solution with respect toocclusal factors

Learning And Teaching Strategy

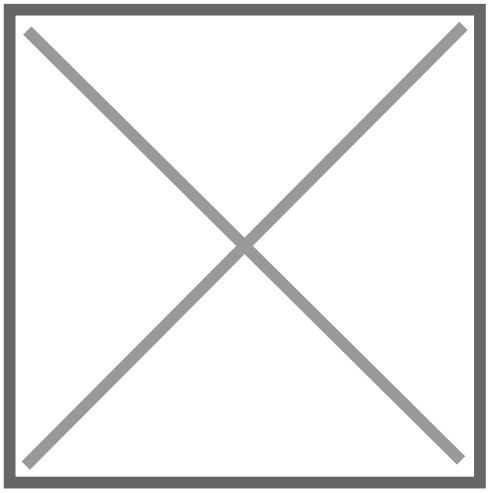
This module will be delivered through a combination of learning and teaching methods, including lectures, seminars, clinical training placement, and tutorials. Delivery will be supported by online discussions and activities posted on the VLE. You will be expected to attend all scheduled sessions and prepare for these in advance by undertaking relevant research and background reading.

Formative Assessment Strategy

Formative assessment is employed to support your learning on the module, allowing you to reflect on feedback on your progress from your tutors and peers. It takes a variety of forms, including group activities, discussions, and tutorial work, and does not contribute to the final module mark.

Summative Assessment Strategy

The summative assessment strategy is underpinned by two items of assessment. The first item is a professional discussion—1 component, while the second item is an objective structured clinical examination (OSCE)—2 components.



Digital Orthodontic Treatment Protocols (Design and Manufacture)

Module Overview

This module covers the critical evaluation of the latest computer-assisted design and computer-assisted manufacturing technologies (CAD/CAM) used in the practice of digital dentistry. It aims to give you practice in the use of commercial CAD/CAM systems and further develop your abilities in the production of clear aligners and other orthodontic treatment systems. Dental CAD software packages will be used to develop a base level of competence and understanding. You will be encouraged to critically appraise the significance and effectiveness of CAD/CAM systems in dentistry. You will be

introduced to various data and imaging capture technologies, their indications, and their application to the digital workflow. The software commonly used in orthodontic treatment planning and the corresponding designing of appliances will be covered in detail. You will have the opportunity to use CAD software in the treatment of actual cases and assess its functions and application to various orthodontic treatment modalities. CAM workflows will include various hardware, such as milling and printing equipment. The module is underpinned by theory consideration during patient assessment so that effective decisions about appropriate orthodontic treatment modalities can be made, developing the corresponding treatment plans, and putting patients' interests first. You will also critically evaluate potential complications and synthesise risk assessment strategies to avoid or minimise complications. The content of this module is current as its methods of assessment follow the equivalent ones utilised bythe Royal College of Physicians and Surgeons intercollegiate examinations. The learning is consolidated by applying taught in-class theory knowledge to the training placement environment. All module components reinforce one another efficiently, as the taught in-class theory sessions running in parallel with the clinical training placement prepare the students appropriately for their clinical practice viva assessment and written exams.

Indicative Content

1. Development of treatment plans based on patient assessment, diagnostic data, prognosis, analysis of the known associated risks and shared decision-making
2. Development of risk assessments associated with the finalised / agreed treatment plans
3. Principles of CAD/CAM technology—The digital workflow
4. CBCT for orthodontics: indications and interpretation
5. Soft tissue and skeletal digital data capture6Intraoral scanning techniques
6. Digital Data Analysis
7. Digital Treatment Planning
8. Digital staging of treatment: tooth movement and anchorage
9. Advanced mechanics in fixed and removable clear aligner therapy
10. Digital Clinical Workflow
11. Identification and management of orthodontic therapy complications
12. Addressing errors in indirect bonding and digital workflows
13. Adjusting treatment plans mid-course

Learning Outcomes
On successful completion of this Module you will be expected to be able to:

1. Critically appraise and evaluate the different forms of Conventional and Digital Dentistrytechnology in relation to Orthodontic treatment
2. Critically evaluate and combine digital and virtual clinical data to formulate a workflow for adefinitive orthodontic treatment plan
3. Critically evaluate new treatment protocols in orthodontic treatment to create a comprehensive risk assessment prior to implementation
4. Critically evaluate treatment outcome and provide aftercare to produce a patient-centered maintenance regime

Learning And Teaching Strategy

This module will be delivered through a combination of learning and teaching methods, including lectures, seminars, training placement, and tutorials. Delivery will be supported by online discussions and activities posted on the VLE. You will be expected to attend all scheduled sessions and prepare for these in advance by undertaking relevant research and background reading.

Formative Assessment Strategy

Formative assessment is employed to support your learning on the module, allowing you to reflect on feedback on your progress from your tutors and peers. It takes a variety of forms, including group activities, discussions, and tutorial work, and does not contribute to the final module mark.

Summative Assessment Strategy

The summative assessment strategy is underpinned by two items of assessment. The first item is a viva based on the presentation of 2 selected clinical cases, while the second item is a 60-minute written examination.

Multidisciplinary Care and Advanced Reflective Clinical Practice

Module Overview

Engaging in reflective practice allows students to transition from a merely technical understanding of orthodontics to comprehensive mastery that encompasses mutidisiplinary patient-focused care. The module reinforces clinical learning gained from earlier modules through reflection, shaping acumen and enhancing the capacity to adapt to the ever-evolving field of orthodontic practice. The content of this module focuses on the development of self-reflective skills, which are considered the best approach to continuing professional development for healthcare professionals, in line with the requirements set by the General Dental Council students reflect on their clinical skills, and the write-up of logbooks informs reflection, highlighting multidisciplinary connections and actively incorporating them into their orthodontic practice. By engaging in critical self-evaluation and collaborating across disciplines, students learn to provide exceptional care while advancing their competencies. Embracing these principles ultimately fosters a practice culture that prioritizes not only technical skills but also the holistic well-being of patients, leading to enhanced treatment outcomes. Students critically reflect on their clinical skills through self-assessment and interdisciplinary collaboration. By examining their existing knowledge base and identifying areas for improvement, students also further their clinical development and provide superior patient outcomes. A multidisciplinary approach requires the integration of knowledge from various fields of expertise, such as oral surgery, periodontology, and psychology, pivotal to enhancing patient care. The module develops information literacy, using contemporary and seminal sources to compile a critical evaluation of specialist practice to allow you to develop strategies to enhance practice. The learning is consolidated by reflecting on the skills and experience acquired during the training placement that took place since the start of the programme.

Indicative Content

1. The characteristics of critical reflective thinking
2. Questioning professional assumptions, values and beliefs
3. Reflective writing and critical thinking
4. Finding resources to support your critical reflective writing
5. Deepening critical reflective writing
6. The identification or creation of a reflective question based on critical evaluation of practice andtheory
7. Revisiting professional experiences
8. Justifying actions, clinical outcomes and treatment plans with strategies to enhance practice
9. Exploring the impact of actions on professional practice

Learning Outcomes

On successful completion of this Module you will be expected to be able to:

1. Present complex cases, patient history and patient records, evidencing the development ofdetailed treatment plans, including timelines and sequencing, based on the critical appraisal ofpatient assessment outcomes
2. Critically evaluate your clinical practice and skills and formulate strategies for self-development
3. Critically reflect on the treatment outcome and the aftercare maintenance regime

Learning And Teaching Strategy

This module will be delivered through a combination of learning and teaching methods, including lectures, seminars, clinical training placement, and tutorials. Delivery will be supported by online discussions and activities posted on the VLE. You will be expected to attend all scheduled sessions and prepare for these in advance by undertaking relevant research and background reading.

Formative Assessment Strategy

Formative assessment is employed to support your learning on the module, allowing you to reflect on feedback on your progress from your tutors and peers. It takes a variety of forms, including group activities, discussions, and tutorial work, and does not contribute to the final module mark.

Summative Assessment Strategy

The summative assessment strategy is underpinned by two items of assessment. The first item is a portfolio of 5 clinical cases derived from the training placement, while the second item is a 1500-word self-reflective report.

Research Methodology

Module Overview

This module provides a robust platform for acquiring critical research skills essential for postgraduate dental studies and research. This module prepares students for future success as researchers, educators, and practitioners. It focuses on attributes such as creativity, innovation, influence, and impact, further empowering students to contribute meaningfully to the orthodontic field, ensuring their work not only advances their professional careers but also enhances patient care outcomes. Research skills developed during this module will be used in a range of dental experimental project case studies. Students will learn to design a research study, prepare specimens, and test them using the appropriate apparatus. They will gain knowledge on software tools for statistical analysis and presentation of results, while linked workshops will help them apply knowledge. A major part of this module is dedicated to the Research Proposal. Students will learn how to develop and structure a Research Proposal, including how to develop research questions, aims, objectives, and hypotheses, but also the corresponding research methodology. Taught lectures will broaden understanding of research methodologies, applying them to real-world dental experimental projects and case studies. Mastery of these concepts is crucial, as they enable students to critically evaluate existing literature and the evidence supporting various orthodontic treatments and emerging technologies. As future health practitioners and researchers, they will be required to not only understand the results of research studies but also to communicate them effectively to influence clinical practice.

This module offers practical learning experiences, where students will engage in the design of research studies, the preparation of specimens, and the testing of these specimens using suitable apparatus. These hands-on experiences are invaluable, as they translate theoretical knowledge into practical skills that students will utilize in their careers. Understanding how to conduct experiments and utilize appropriate methodologies to collect and analyse data is essential for generating reliable findings that can influence orthodontic practices and patient outcomes.

Furthermore, the module emphasizes the importance of presentation skills, empowering students to confidently present and defend their research proposals. Effective communication is an underrated yet essential aspect of research.

Professionals must convey their findings to diverse audiences, including peers, academic committees, and non-specialists. Developing strong presentation skills enhances a student's ability to influence and impact their field positively, as well as to advocate for evidence-based treatments that ultimately lead to improved clinical practices.

Indicative Content

1. Descriptive Statistics and Infographics
2. Statistical Theory and Models: Hypothesis Testing / Student’s T-Test / ANOVA (1-way / 2-way)/ Normality Tests / Power Analysis
3. Non-Parametric Tests
4. Correlation and Regression Analysis
5. The structure of the Research Proposal
6. The literature review in the Research Proposal
7. Development of research questions, aims, objectives and hypotheses
8. Development of research methodology
9. Development of the Research Proposal
10. Dental experimental project case studies. Specimen preparation – Range of experimentaltesting
11. Experimental testing data analysis – Statistical Analysis
12. Software tools for statistical analysis and presentation of results
13. Presentation Skills Development
14. Critical analysis and engagement with ethical guidelines in relation to the research proposal

Learning Outcomes

On successful completion of this Module you will be expected to be able to:

1. Develop a research proposal with appropriate aims, objectives and hypotheses
2. Critically review the literature for a research proposal
3. Synthesise appropriate methodology in a research proposal
4. Present and defend a Research Proposal

Learning And Teaching Strategy

Blended teaching for this module will be delivered through a combination of learning and teaching methods, including lectures, seminars, workshops, and tutorials. You will be expected to attend all scheduled sessions and prepare for these in advance by undertaking relevant research and background reading. To complete the module successfully, you must allocate a substantial amount of time for independent study and self-directed research to steadily build your knowledge and complete, present, and defend the Research Proposal.

Formative Assessment Strategy

Formative assessment is employed to support your learning on the module, allowing you to reflect on feedback on your progress from your tutors and peers. It takes a variety of forms, including group activities, discussions, and tutorial work, and does not contribute to the final module mark.

Summative Assessment Strategy

The summative assessment strategy is underpinned by two items of assessment. The first item is the submission of a 3,000-word Research Proposal. The second summative assessment is a 20-minute oral assessment during which the presentation and defense of the Research Proposal will take place.

Dissertation

Module Overview

The aim of this module is to provide you with an opportunity to undertake an independent, substantial, and in-depth investigation on a research topic of particular interest. There is flexibility in the type of research, which can be experimental, survey-based, literature-based, etc. Further activities will develop your critical thinking, critical analysis, and problem-solving skills, as well as your working independence. You will develop your abilities to identify and set the correct research questions, aims, objectives, and research hypotheses for a research study of interest. The knowledge acquired from the taught modules and your experiential learning will aid in developing your research methodology, collecting and analysing the information and/or data, as well as interpreting and justifying your results, leading into your conclusions. You will receive the required support and guidance from your supervisor and the module leader in order to complete your research and produce your dissertation. If your research is of suitable quality, you will be invited to re-format your project into an academic paper suitable for publication in an academic journal.

Indicative Content

1. Redevelopment / Finalisation of the Research ProposalLearning Learning and Teaching Strategy
2. Ethical Considerations
3. Development of a comprehensive literature review
4. Identifying and setting research questions, aims, objectives and research hypotheses
5. Research Designing / Critical selection of appropriate research methodology
6. Development of complex problem-solving skills
7. Data management
8. Critical analysis of the collected Information/Data
9. Management of the writing and production of the Dissertation
10. Presenting and defending research findings verbally
11. Preparing for a Viva

Learning Outcomes

On successful completion of this Module you will be expected to be able to:

1. Plan and design an extended piece of work in critical research or professional enquiry toadvance knowledge in your specialist area
2. Critically evaluate literature from a range of sources and synthesise into a conceptualframework to guide critical research or professional inquiry.
3. Critically examine a range of data collection methods, exploring limitations in order to proposeand justify an appropriate methodology for a research study
4. Critically analyse, interpret, summarise, and synthesise information and data/information from arange of primary and secondary sources and use these to construct and justify robustconclusions
5. Communicate complex academic or professional issues
6. Critically reflect on your project outcomes and personal development during research process,and defend ideas and recommendations

Learning And Teaching Strategy

This module will be delivered through a combination of learning and teaching methods, including lectures, seminars, workshops, and tutorials. Delivery will be supported by online discussions and activities posted on the VLE. You will be expected to attend all scheduled sessions and prepare for these in advance by undertaking relevant research and background reading.

Formative Assessment Strategy

Formative assessment is employed to support student learning on the module, allowing you to reflect on feedback on your progress from your teachers and peers. It takes a variety of forms, including multiple-choice choice questionnaires or short quizzes designed to identify areas of knowledge and understanding requiring further attention. Formative assessment does not contribute to the final module mark.

Summative Assessment Strategy

The summative assessment strategy is underpinned by three items of assessment. The first item is the submission of a 10,000-word dissertation. The second item is a 10-15 minute oral assessment. The third item is a Viva.

Admission Criteria

General Entry Requirements

Entry Requirements You are normally expected to have successfully completed an honours degree (or equivalent) in a relevant subject and have appropriate work experience. You may be required to attend an interview and/or provide a portfolio of work.

Additional Criteria

1. The standard entry requirement for the course is Bachelor of Dental Surgery (BDS)
2. If English is not your first language, you will need to complete a Secure English Language Test at IELTS 7.0 or equivalent with no band lessthan 6.5
3. Current registration with the UK General Dental Council (GDC) or equivalent in another country