

Dental science

For information regarding the BSc Honours program in oral biology (dental science) please see *Oral biology honours program* (p.17).

First year

511-121 Introduction to Biomedical Science

Credit points: 25

Coordinator: Professor E.C. Reynolds

Contact: 96 hours of lectures (*Semester 1*).

Description: This subject covers the principles of whole body structure and function, cellular structure and function, the importance of genes, proteins and biological membranes and the homeostatic mechanisms involved at the molecular, cellular and corporate level.

Assessment: One 2-hour written examination at the end of the semester and three, 45-minute multiple choice question tests during the semester.

511-124 Oral Health Sciences 1

Credit points: 37.5

Coordinator: Associate Professor SG Dashner

Contact: 162 hours, including lectures, tutorials and practicals (*Semester 2*).

Description: This subject is comprised of two modules: *Chemistry* and *Functional Anatomy* (consisting of anatomy, embryology and histology), which cover the structure, organisation and development of the human body at both macroscopic and microscopic levels.

Assessment: Three 2-hour written examinations at the end of the semester; one 15-minute practical test during the semester, one 30-minute practical examination at the end of the semester, continuing assessment tests and continuing practical work.

511-126 Dental Practice 1

Credit points: 37.5

Coordinator: Professor M.V.Morgan

Prerequisites: N/A.

Contact: 148 hours of lectures, tutorials, practical/laboratory classes, student-directed learning, problem-based learning (PBL) and clinical and community activities (*Year long*).

Description: This subject is comprised of four modules:

Introduction to Dentistry: The role, responsibilities and activities of a dentist in the community.

Human Development and Behaviour: The activities of a dentist with the development and behaviour of individuals in the community and the constants and variations in human behaviour and human oral anatomy (ensuring that students will recognise oral health); comparative oral anatomy, identification of human teeth and their anatomical relationship in a clinical context and some forensic dentistry and radiography.

Dental Materials Science and Conservative Dentistry: Principles and handling of materials relevant to the treatment of oral diseases, structure of matter, classification of materials and mechanical properties.

Assessment: One 2-hour written paper at the end of Semester 1, one 3-hour written paper at the end of Semester 2 and written and practical work/assignments throughout the year.

Prescribed texts: KJ Anusavice, *Phillip's Science of Dental Materials*, 11th edn, Saunders, 2003. • Australian Resuscitation Council, *Cardiopulmonary Resuscitation*, A.R.C., 1991. • J J Murray (ed.), *Prevention of Oral Disease*, 3rd edn, Oxford University Press, 1996.

Second year

511-226 Dental Practice 2

Credit points: 50

Coordinator: Dr M.A.Stacey

Prerequisites: Successful completion of all Year 1 subjects.

Contact: 232 hours of lectures, tutorials, practical/laboratory classes, problem-based learning (PBL) and clinical activities (*Year long*).

Description: This subject is comprised of three modules:

Oral Biology: The causation, natural history, clinical appearance and prevention of dental caries and periodontal diseases and the treatment of periodontal diseases; the biochemistry of teeth, supporting structures and saliva; the molecular nature of odontogenesis and biomineralisation, calcium phosphate chemistry and oral diseases and mucosal immunity; history taking, examina-

tion, diagnosis and treatment planning in the clinical context; local analgesia administration.

Human Development and Behaviour: The physical and psycho-social concepts relating to the growth and development process, emphasising normal patterns; growth and maturation, cognitive and emotional development and functioning; oral anatomy and histology; aspects of radiography.

Dental Materials Science and Conservative Dentistry: Materials used in conservative operative procedures when treating dental caries and operative/surgical interventions for dental caries.

Assessment: Three 2-hour written examinations, one at the end of Semester 1 and two at the end of Semester 2, assessment of preclinical and clinical work throughout the year and continuing and PBL assessment. Students will be permitted to proceed to clinical work only after having satisfactorily completed the preclinical units.

Prescribed texts: B K B Berkovitz, G R Holland and B J Moxham, *A Colour Atlas and Text of Oral Anatomy, Histology and Embryology*, 2nd edn, Wolfe Medical, 1992. • S N Bhaskar (ed.), *Orban's Oral Histology and Embryology*, 11th edn, Mosby, 1990. • R E Jordan, L Abrams and B S Kraus, *Kraus' Dental Anatomy and Occlusion*, 2nd edn, Mosby, 1992. • R S Schwartz, J B Summitt and J W Robbins, *Fundamentals of Operative Dentistry. A Contemporary Approach*, 3rd edn, Quintessence, 2001. • H Takei, M G Newman and F A Carranza Jr, *Carranza's Clinical Periodontology*, 9th edn, Saunders, 2002. or J Lindhe, T Kaggung and N Lang, *Clinical Periodontology and Implant Dentistry*, 4th edn, Munksgaard, 2003. or T G Wilson and K S Korman, *Fundamentals of Periodontics*, Quintessence, 2002.

511-224 Oral Health Sciences 2a

Credit points: 37.5

Coordinator: Associate Professor M.F. Burrow

Prerequisites: Successful completion of all Year 1 subjects.

Contact: 192 hours of lectures, tutorials, practical activities - including workshops and dissection - and computer assisted learning (CAL) (*Semester 1*).

Description: This subject comprises three modules:

Physiology: Physiological integration, the interface between tissue cells and the internal environment, biophysics of excitable and contractile tissue, the physiology of mammalian organ-systems: circulatory, respiratory, muscular, renal and digestive; the coordination of bodily functions by hormonal and neural mechanisms.

Biochemistry: The thermo-dynamics and homeostasis of living systems and biochemical adaption; the structure, function and metabolism of proteins, carbohydrates, lipids and nucleic acids; basic principles of gene structure and expression and metabolic disorders with a genetic basis; and structure and function of immuno-globulins.

Topographical Anatomy: The structure and organisation of the head and neck, including development and functional perspectives; practical dissections of the head and neck region; vocationally-relevant clinical anatomy for dentists.

Assessment: (1) Physiology: One 45-minute examination at mid-semester, one 2-hour written examination at the end of the semester, a component of ongoing assessment related to practical classes and tasks related to computer-aided learning activities. (2) Biochemistry: One 2-hour written examination at the end of the semester; assessment of practical work throughout the semester. (3) Topographical Anatomy: One 2-hour written examination at the end of the semester and one 15-minute practical test during the semester. A pass in each of (1), (2) and (3) is required for an overall pass in this subject.

511-225 Oral Health Sciences 2b

Credit points: 12.5

Coordinator: Associate Professor M.F. Burrow

Prerequisites: Successful completion of all Year 1 subjects.

Contact: 90 hours of lectures and practical activities (*Semester 2*).

Description: This subject is comprised of two modules:

Microbiology: Micro-organisms involved in oral infections and the importance of appropriate sterilisation and disinfection procedures in the dental setting. Practical class material is presented in case study format reflecting every day presentations of infections in the oral cavity.

Neuroscience: The development, structure and function of the human nervous system, emphasising the neural basis of sensory and motor behaviour.

Assessment: (1) Microbiology: One 2-hour written examination and 1-hour practical examination at the end of the semester and a written assignment of no more than 2000 words during the semester. (2) Neuroscience: One, 2-hour written paper at the end of the semester. An overall pass in each of Sections 1 and 2 is required for an overall pass in this subject.

Prescribed texts: J Bagg, T W MacFarlane, I R Poxton, C H Miller and A J Smith, *Essentials of Microbiology for Dental Students*, Oxford, 1999.

Third year

511-326 Dental Practice 3

Credit points: 62.5

Coordinator: Dr M.S. Hopcraft

Prerequisites: Successful completion of all Year 2 subjects.

Contact: 215 hours of lectures, seminars, tutorials, student-directed learning, clinical and practical (laboratory) work (*Year long*).

Description: This subject is comprised of three modules.

Restorative Dentistry: The formulation of an integrated treatment plan for simple cases needing a combination of periodontal, conservative and/or removable prosthetic dental treatment; completion of complex forms of conservative dental treatment; restoration of badly damaged teeth; taking and making diagnoses from 'routine' dental radiographs; selection and use of dental materials; treatment of a fully edentulous patient; principles of complete denture construction; the formulation of appropriate treatment plans integrating removable prostheses; the principles and prescription of a partial denture design; construction of a simple acrylic denture; principles of occlusion and communication with members of the dental team.

Oral Health Practice: Continued emphasis on the primary prevention of dental caries and the prevention and treatment of periodontal diseases; measurement of the oral diseases in the community using epidemiological and statistical tools; designing, conducting and presenting dental research in the form of a basic oral health survey.

Growth and Development: The principles relating to the normal growth process, particularly dental and skeletal development and maturation; social and behavioural development of children and adolescents; growth prediction and its clinical application; recognition of normal and aberrant growth and occlusal patterns; the diagnosis of malocclusion and the extrapolation to future treatment needs; biomechanical and clinical aspects of orthodontics.

Assessment: (1) One 2-hour written examination at the end of Semester 1; (2) Two 2-hour written examinations at the end of Semester 2; (3) Practical laboratory examinations and a 15-minute viva voce examination at the end of Semester 2, continuing laboratory and clinical assessment; (4) Performance in seminars, one written assignment of no more than 1000 words and group presentation and written research project of no more than 3000 words. A pass in Section 3 and in each of the written examinations in Section 2 is required for an overall pass in this subject. Students will be permitted to proceed to clinical work only after having satisfactorily completed the preclinical units.

Prescribed texts: I Klineberg, *Occlusion: Principles and Assessment*, Wright, 1991. • P W Goaz and S C White, *Oral Radiology: Principles and Interpretation*, 3rd edn, Mosby 1994. • D M Ranly, *A Synopsis of Craniofacial Growth*, 2nd edn, Appleton and Lange, 1998. • A Thylstrup and O Fejerskov, *Textbook of Clinical Cariology*, 2nd edn, Munksgaard, 1994. • H Takei, M G Newman and F A Carranza Jr, *Carranza's Clinical Periodontology*, 9th edn, Saunders, 2002 OR. • J Lindhe, T Kagging and N Lang, *Clinical Periodontology and Implant Dentistry*, 4th edn, Munksgaard, 2003 OR. • T G Wilson and K S Kornman, *Fundamentals of Periodontics*, Quintessence, 2002.

511-323 Oral Health Sciences 3

Credit points: 25

Coordinator: Professor M.V. Morgan.

Prerequisites: Successful completion of all Year 2 subjects.

Contact: 82 hours of practical work, lectures, tutorials, student-directed and computer-assisted learning (*Semester 1*).

Description: This subject is comprised of two modules.

Pharmacology and Pathology: The principles of drug action in the body and the mechanisms of action of drugs in common use in dentistry and medicine, disorders of growth and neoplasia, inflammation and repair, circulatory disturbances, and the special pathology of the major organ systems.

Medicine: Common medical problems, methods of diagnosis and treatment and diseases of particular importance to dentists.

Assessment: (1) Pharmacology: One 1-hour multiple choice written examination at mid semester and one 2-hour multiple choice and short answer written examination at the end of Semester 1. (2) Pathology: One 2-hour written examination and one 1-hour practical examination at the end of Semester 1 and continuous assessment. (3) Medicine: One 2-hour written examination at the end of Semester 1. A pass in each of Sections (1), (2) and (3) is required for an overall pass in this subject.

Prescribed texts: V Kumar, AK Abbas and N Fausto (eds), *Robbins and Cotran Pathologic Basis of Disease*, 7th edn, Elsevier Saunders, 2005. • J A Yagelia, E A Neidle and F J Dowd, *Pharmacology and Therapeutics for Dentistry*, 5th edn, Elsevier Mosby 2004, OR. • DE Golan, AH Tashjian, EJ Armstrong, JM Galanter, AW Armstrong, RA Arnaout and HS Rose, *Principles of Pharmacology: The Pathophysiologic Basis of Drug Therapy*, Lippincott, Williams and Wilkins, 2004, OR. • HP Rang, MM Dale and JM Ritter, *Pharmacology*, 5th edn, Churchill Livingstone, 2003.

511-324 Scientific Principles of Surgical Prac.

Credit points: 12.5

Coordinator: Associate Professor ACH Smith

Prerequisites: Successful completion of all Year 2 subjects.

Contact: 60 hours of lectures, seminars, tutorials and student-directed learning (*Semester 1, repeat 2*).

Description: This subject is comprised of two modules.

Surgery: Principles and practice of surgery; surgical pathology of acute and chronic infection; control of infection; cancer, head and neck surgery.

Oral Medicine, Pathology and Surgery: Causes and processes of oral diseases affecting human beings; application of basic and clinical sciences knowledge to the clinical situation, individuals and the community; pathology of the jaws, the salivary glands, temporomandibular joints, oral mucosae, teeth and periodontium; examination and diagnostic methods and the dentist's responsibility for the safe and effective management of patients.

Assessment: One 3-hour written examination at the end of Semester 2 and continuing clinical and written assessment (consisting of two short-answer written papers of no more than one hour each) during the semester.

Prescribed texts: H A F Dudley and B Waxman (eds), *An Aid to Clinical Surgery*, 4th edn, Churchill Livingstone, 1989.

Fourth year

511-422 Dental Practice 4

Credit points: 100

Coordinator: Associate Professor MJ McCullough

Prerequisites: Successful completion of all Year 3 subjects.

Contact: Year-long. Lectures, seminars, tutorials (including problem or topic orientated classroom-based tutorials, structured professional and procedural skills sessions and chairside tutorials) and pre-clinical exercises (including student-centred learning, problem-based learning and computer-assisted learning, laboratory and clinical work/activities (including problem-based learning and student-centred learning, participation in outpatient clinics, operating theatre sessions and meetings and independent clerking patients on medical and surgical wards, treatment of advanced periodontal and gerodontal patients), multimedia teaching/ learning (*Year long*).

Description: This subject is comprised of five modules.

Restorative Dentistry: General practice - enhancement of clinical skills; implant dentistry - role of implants in treatment planning; endodontics and fixed prosthodontics.

Growth and Development: Orthodontics - recognition of normal and aberrant growth; skeletal and occlusal patterns; diagnosis of malocclusion, treatment planning and biomechanics of tooth movement; Paediatric Dentistry - effects of physical and psychological growth and development on dental health and treatment of the child; diagnosis and treatment planning for the child. Special Needs Dentistry - short series of lectures on topics including management of the compromised elderly patient, and 2 clinical sessions.

Oral Medicine, Pathology and Surgery: Oral Medicine and Oral and Maxillofacial Surgery; Oral Pathology and Oral Radiology.

Oral Health Sciences: Community Dental Health - the institutions involved in delivery of dental care in Australia and issues related to the dental workforce; application of behavioural sciences to management of common psychological and psychosocial features in dental practice; Cariology and Prevention - a short series of lectures; Periodontics - treatment of severe periodontal cases following on from treatment undertaken in earlier years.

Advanced Dental Study 1: Background research and literature reviews of a research project which can be undertaken in any of the above areas (in italics).

Assessment: (1) *Restorative Dentistry:* Continuing assessment of pre-clinical and clinical work in endodontics and fixed prosthodontics throughout the year; a practical examination of no longer than 3 hours covering endodontics at the end of the February intensive teaching period; a practical examination of no longer than 3 hours in prosthodontics at the end of Semester 1. (A pass in each of the practical examinations is required to be able to proceed to clinical practice in Semester 2.) One clinical examination of no longer than 3 hours in general practice dentistry during Semester 2 and continuing clinical assessment throughout the year; one 2-hour written examination at the end of Semester 2; an integrated multiple station Objective Structured Clinical Examination (OSCE) of no more than 20 minutes at the end of Semester 2. (2) *Growth and Development:* Continuing assessment of pre-clinical and clinical work; one 2-hour written examination at the end of Semester 2; an integrated multiple station OSCE of no more than 20 minutes at the end of Semester 2. (3) *Oral Medicine, Pathology and Surgery:* Continuing internal assessment consisting of four problem-based multimedia short answer tests of one hour each; One 2-hour written examination at the end of Semester 2; a viva voce examination of no more than 30 minutes at the end of Semester 2; an integrated multiple station (OSCE) of no more than 20 minutes at the end

of Semester 2. (4) *Oral Health Sciences*: One 2-hour written examination at the end of Semester 2; continuing clinical and written assessment; one 30-minute case presentation; an integrated multiple station OSCE of no more than 20 minutes at the end of Semester 2. (5) *Advanced Dental Study 1*: Assessment (pass/fail) will be conducted at the end of Semester 2 and will be based on an oral presentation of a literature review related to the research project. A pass in each of Sections 1, 2, 3 and 4 is the required pass for an overall pass in Dental Practice 4. Students will be permitted to proceed to clinical work only after having satisfactorily completed the pre-clinical units.

Fifth year

511-522 Dental Practice 5

Credit points: 100

Coordinator: Associate Professor P.R. Wilson

Prerequisites: Successful completion of Year 4 subject.

Contact: Year long clinical experience within and without the Royal Dental Hospital of Melbourne (*Year long*).

Description: This subject, which covers the entire 5th year curriculum, encompasses a wide variety of clinical teaching, within and without the Royal Dental Hospital of Melbourne. During the year, students treat patients in general practice clinics and rotate through specialist teaching. Students are not expected to perform treatment during specialist practice.

General Practice Rotation: All aspects of dentistry for adults including Operative Dentistry, Fixed and Removable Prosthodontics, Endodontics, Periodontics, Preventive Dentistry and Oral Surgery and Medicine; clinical treatment as needed by patients, with the emphasis on 'whole patient treatment' and continuing care on a rotational basis at the Royal Dental Hospital of Melbourne (RDHM) clinics and community clinics. Referral of patients to oral health students.

Specialist Practice Rotation: Specialist clinics at the RDHM, seminars and postgraduate student clinical sessions in the areas of Oral Surgery, Oral Medicine, Prosthodontics, Endodontics, Periodontics, Special Needs Dentistry, Radiology and Paediatric Dentistry. An Orthodontic course associated with Paediatric Dentistry follows treatment in progress. Attendance at: external clinics for experience not available at the RDHM, such as complex radiology; Oral Surgery departments for consulting clinics and operating theatre experience; and emergency departments and medical teams for experience of seriously ill patients.

Academic Teaching/Study Module: Lectures, workshops and other teaching in areas such as Treatment Planning, Dental Ethics and Jurisprudence.

Advanced Dental Study 2: Continuation of the background research and literature review of a research project (commenced in Semester 2 of 4th year) and an oral presentation of that project in Semester 2.

Elective Study: There is time available during the year for students to undertake elective studies which can include interstate and/or overseas visits.

Assessment: (1) One 25-minute viva voce examination on integrated treatment planning. Particular emphasis will be placed on the ability of the student to formulate an appropriate treatment plan after analysis of clinical data of a patient (not present). The student will be presented with a patient's clinical records (eg. histories, dental charts, radiographs, photographs, study casts, etc.) one hour before the *viva voce* examination of 25 minutes. The student will make a written treatment plan to be taken into the oral examination and may also prepare personal notes. (2) One 30-minute case presentation with the patient present and complete records. The student may choose a patient they have treated in any discipline. (3) One 2-hour integrated multiple station Objective Structured Clinical Examination (OSCE) presented in an electronic format and based on clinical scenarios with appropriate photographs and radiographs. (4) An oral presentation of the research project (during Semester 2) and a written report of no more than 3000 words at the end of Semester 2 and an oral presentation on the Shepparton rotation. A pass in each section of the assessment is required to pass Dental Practice 5 overall. If a student does not perform satisfactorily in one section, he/she may have to submit to further assessment in a form to be determined by the relevant subject examiner/s.

Although there are no numerical quotas for any particular clinical treatments, students should endeavour to obtain exposure to as wide a range as possible of ALL forms of dental treatment. Students should note carefully that their lack of experience in any clinical area will NOT be acceptable as an excuse or reason for unsatisfactory progress in Dental Practice 5.

All students are required to complete a log and attendance book of clinical procedures in order to sit the final examinations. Students should also note that it will be necessary to have completed a wide range of treatment procedures to be permitted to sit the final examinations. This will be determined by completion of the clinical log forms.

