**Oral Medicine and Diagnostic Sciences Department**

**College of Dentistry, King Saud University**

**September 2013 – June 2014 G**

**King Saud University**

**College of Dentistry**

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| **Course Specification** | | | |
| Course Title: | **Oral Biology – 153 DDS** | |
| Course Code: | **153 DDS** | |
| Course Director(s): | **MUC: Dr Ohoud N. Al Otaibi**  **DUC: Prof Rita M. Khounganian** | |
| Department: | **Oral Medicine and Diagnostic Sciences** | |
| Academic Year | **2011-2012 G (1432 – 1433 H)** | |

**King Saud University**

**College of Dentistry**

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| **Course Specification** | | | |
| Course Title: | **Oral Biology & Histology** | |
| Course Code: | **253 DDS** | |
| Course Director(s): | **MUC: Dr Ohoud N. Al Otaibi**  **DUC: Prof Rita M. Khounganian** | |
| Department: | **Oral Medicine and Diagnostic Sciences** | |
| Academic Year: | **2013-2014 G (1434 – 1435 H)** | |

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| Institution:  **King Saud University** |
| College/Department:  **College of Dentistry/ Oral Medicine and Diagnostic Sciences Department** |

**A. Course Identification and General Information**

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| 1. Course title and code:  **Oral Biology and Histology – 253 DDS** |
| 2. Credit hours:  **Three Credit Hours** |
| 3. Program(s) in which the course is offered:  **Bachelor of Dental Surgery** |
| 4. Name of faculty member responsible for the course:  **MUC: Dr. Ohoud Al Otaibi**  **DUC: Prof. Rita Khounganian** |
| 5. Level/year at which this course is offered:  **Second Year** |
| 6. Pre-requisites for this course (if any):  **Anat 112 – General Anatomy and Histology** |
| 7. Co-requisites for this course (if any):  **Oral Pathology (212 DDS)** |
| 8. Location if not on main campus:  **MUC and DUC Campuses** |

**B. Objectives**

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| 1. Summary of the main learning outcomes for students enrolled in the course.   **By the end of this course, the students should be able to:**   1. **Define and describe the normal structures of the oral cavity. (1.1)** 2. **Explain the principles of tooth development and normal oral tissues and craniofacial structures. (1.1)** 3. **Differentiate and illustrate the macroscopic and microscopic hard structures of the tooth and the periodontium, oral mucosa, salivary glands and temporomandibular joint. (1.1)** 4. **Draw the dental and paradental tissues. (1.1)** 5. **Relate the normal structures with the clinical application. (1.1,1.4)** 6. **Summarize the effect of age factor on normal studied tissues. (1.1)** |
| 1. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field).   **Based on the course evaluation, the course outline is accordingly modified to fulfill the needs of the students.** |
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**C. Course Description** (Note: General description in the form to be used for the Bulletin or Handbook should be attached).

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| **1. TOPICS to be COVERED** | **No. of Weeks** | **Contact Hours** |
| **Introduction and Orientation to the Course and a Quick review on the Cell Structure and Function** (Light and electron microscopic features of the nucleus, cytoplasm, cell membrane , mitosis, cell cycle) | 1 | 1 |
| **Basic structure of the oral and dental tissues** (Brief description of the oral cavity including the oral mucosa, tongue, palate, salivary glands and TMJ in addition to the tooth structure and the surrounding structures) | 1 | 1 |
| **General human Embryology** (Essentials of Embryology, prenatal phases. Formation of the 3-germ layer -Formation of the neural crest cells) | 2 | 2 |
| **Development of the head, face and oral cavity** (Development of the primitive oral cavity, including development of the tongue and development of the thyroid gland as well as the pharyngeal arches and their derivatives in addition to the development of the face, eye, ear, nose and palate including the primary and secondary palate) | 2 | 2 |
| **Development and growth of the maxilla** (Premaxillary and maxillary ossification centres-Factors affecting prenatal and postnatal growth of maxilla and development of maxillary sinus) | 1 | 1 |
| **Development and growth of the mandible** (Role and fate of Meckel’s Cartilage in the development of the mandible-Ossification Centre’s & Growth Factors responsible for the prenatal and post natal growth of the Mandible) | 1 | 1 |
| **Development of the teeth I : Crown formation (**Dental Lamina-Bud stage-Cap stage-Early bell stage-Advanced bell stage and cervical loop) | 1 | 1 |
| **Dentinogenesis** (Formation of organic collagen matrix and Mineralization of dentin) | 1 | 1 |
| **Amelogenesis** (Enamel matrix formation, mineralization and maturation)  **Life cycle of Ameloblasts** (Light microscopic and ultrastructural observations) | 1 | 1 |
| **Development of the teeth II : Root formation and supporting structure** (Development of the epithelial root sheath of Hertwig-single & multiple root formation–development of cementum, periodontal ligament, and alveolar bone) | 1 | 1 |
| **Eruption of the deciduous and permanent teeth**  (Pattern of tooth movement–Histology of Tooth Movement-Mechanism of tooth movement- Clinical Considerations) | 1 | 1 |
| **Shedding and exfoliation of the deciduous teeth (**Definition-Pattern of Shedding-Histology of Shedding-Mechanism of resorption and shedding-clinical considerations: remnants of deciduous teeth-retained and submerged deciduous teeth) | 1 | 1 |
| **Developmental anomalies & clinical considerations** (Hereditary causes and environmental causes of congenital malformations–developmental anomalies and Teratogenic Effects) | 1 | 1 |
| **Enamel Structure I:** (Origin-Physical and Chemical characteristics-Structure)  **Enamel Structure II:** (Enamel Surface Structures: Prismless enamel-Perikymata, incremental lines. Age changes of enamel-Clinical Implications: Fluoridation-Acid Etching) | 1 | 1 |
| **Dentin Structure I: (**Origin-Physical and Chemical characteristics -Basic anatomy  Types of Dentin-Predentin-Histology of Primary Dentin-Incremental growth lines)  **Dentin Structure II:** Dentino-enamel and dentino- cemental junction-Innervation of dentin-dentin Sensitivity-Theories of Pain sensation. Age changes of Dentin: sclerotic /dead tract | 1 | 1 |
| **Dental Pulp** **Structure** (Origin-Functions and Anatomy-Histology-Vascularity and Lymphatic supply-Nerve supply. Regressive changes of the pulp: fibrous changes -pulpal stones –diffuse calcifications) | 1 | 1 |
| **Cementum** **Structure** (Development -Structure**-**Origin-Physical and Chemical characteristics-Composition-Types of cementum. Clinical considerations-Histology-Incremental lines of Salter-CEJ and DCJ-Age changes of the cementum) | 1 | 1 |
| **Periodontal Ligament** **Structure** (Origin-Development-Functions-Histological structure-Blood supply-Lymphatic system-Nerve supply-Age changes of the periodontal ligament) | 1 | 1 |
| **Bone and Alveolar Bone** (Development-Structure -Physiologic and histological alterations-Internal Reconstruction of Bone-Clinical Consideration and age changes) | 1 | 1 |
| **Oral Mucosa**  1. Definitions and General Considerations: Epithelium-lamina propria- Submucosa)  2. Masticatory mucosa: Hard palate-Gingiva-Vermillion border of lip  3. Non-keratinized Oral Mucosa & Specialized Mucosa-Lining mucosa & Anterior two third and Posterior one third of the tongue  **Maxillary sinus**  (Anatomical landmarks, development, histological features and its clinical considerations) | 2 | 2 |
| **Salivary Gland**  1. Structure and Function of Salivary Gland  (Serous, mucous , mixed and myoepithelial cells-secretory and excretory ducts-CT elements)  2. Classification and Structure of Human  (Salivary Glands - Major salivary glands-Minor salivary glands-Development and growth-Control of secretion-Saliva: Composition and functions, clinical considerations) | 2 | 2 |
| **Temporomandibular joint (TMJ)**  (Classification of Joints-Gross Anatomy of the TMJ-Development-Histology of Bony structure, articular fibrous covering and articular disk-Muscle of Mastication-Movements at the Joint-Ligaments associated with the Joint-Clinical Considerations) | 1 | 1 |
| **Current topics in Oral Biology and clinical considerations** | 1 | 1 |
| **Total Hours** | 27 | 27 |

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| 2. Course components (total contact hours per semester): | | | |
| Lecture:  **27 Lectures +**  **3 assessments** | Tutorial:  **30 + 15** | Practical/Fieldwork/Internship:  **Practical 15 sessions** | Other:  **CPC sessions** |

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| 3. Additional private study/learning hours expected for students per week. (This should be an average: for the semester not a specific requirement in each week)  **Students should spend a minimum of 2–3 hours per week** |

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| 4. Development of Learning Outcomes in Domains of Learning  **For each of the domains of learning shown below indicate:**   * **A brief summary of the knowledge or skill the course is intended to develop.** * **A description of the teaching strategies to be used in the course to develop that knowledge or skill.** * **The methods of student assessment to be used in the course to evaluate learning outcomes in the domain concerned.** | | | |
| **a. Knowledge** | | | |
| (i) Description of the knowledge to be acquired  **The student should be able to:**   1. **Define and describe the normal structures of the oral cavity. (1.1)** 2. **Explain the principles of tooth development and normal oral tissues and craniofacial structures. (1.1)** 3. **Differentiate and illustrate the macroscopic and microscopic hard structures of the tooth and the periodontium, oral mucosa, salivary glands and temporomandibular joint. (1.1)** 4. **Draw the dental and paradental tissues. (1.1)** 5. **Relate the normal structures with the clinical application. (1.1, 1.4)** 6. **Summarize the effect of age factor on normal studied tissues.** **(1.1)** | | | |
| (ii) Teaching strategies to be used to develop that knowledge  -**Lectures**  **-Clinical pathological correlations and tutorials**  **-Practical sessions using light and virtual microscope**  **-Assignments**  **-Web based e-learning** | | | |
| (iii) Methods of assessment of knowledge acquired   1. **In course assessments which are usually written examinations which may include MCQ, Matching, Sketching and labeling diagrammatic drawings of the tooth, bone , oral mucosa etc. According to the topics included in the assessments, short notes, brief accounts, clinical considerations and essays.**   **2. Laboratory practical assessments using histological glass slides whether ground sections, decalcified sections or soft tissue sections using H& E or special stains such as Masson Trichrome, students have to identify and explain the structures observed under the microscope and sometimes are asked to sketch a drawing of the slide.**  **3. Computer-based Tests; using the virtual microscope and various web sites where students are asked to correlate the clinical with the histological and sometimes with radiographic findings, previously announced quizzes on topics covered to that date.**  **4. Assignments in form of self-evaluated questions included at the end of each chapter in their recommended textbook or provided from the course director in addition to students’ evaluation and performance during the sessions**. | | | |
| **b. Cognitive Skills** | | | |
| (i) Cognitive skills to be developed  **Student should be able to:**  **-Recognize the normal tissues. (2.1)**  **-Distinguish abnormal tissues from the normal. (2.1)**  **-Correlate the clinical findings with the histological details. (2.1)**  **-Apply and analyse principles of oral biology to dental care situations. (2.1)**  **-Solve problems arising in the dental clinic related to basic knowledge.** **(2.2)** | | | |
| (ii) Teaching strategies to be used to develop these cognitive skills  **-Discussions during the lecture time and tutorials are structured to encourage the development of the cognitive thinking by translating the basic knowledge into the dental clinical practice.**  **-Increased use of tutorial and CPC’s**  **-Pre-practical computer based projection of the glass slides to be studied using the virtual microscope during the practical sessions.**  **-Colored Practical manual used during the practical sessions.**  **-To solve the questions and drawings found in the practical manuals**  **-Take home assignments and web search.** | | | |
| (iii) Methods of assessment of students cognitive skills  -**Continuous and final assessments include structured questions on simple clinical scenarios.**  **-Take home assignments and practical manual homework has to be completed and accordingly evaluated.**  **-CPC cases and histological glass slides using the virtual microscope will be discussed and presented by the students in the format of group discussion and tutorials.**  **-The students have to interpret the structures found on the provided slides, identify the type of tissue, stain .etc….based on a written questionnaire given to each group of students with their respective slides.**  **-The students may then prepare a power point presentation of the photomicrographs that they have taken from the slides associated with a hard copy** | | | |
| **c. Interpersonal Skills and Responsibility** | | | |
| (i) Description of the interpersonal skills and capacity to carry responsibility to be developed  **-Students should be able to:**  **-Work in groups. (3.1)**  **-Learn to share information and cooperate. (3.4)**  **-Communicate and deliver information to his instructors, clinical staff and later on to the patients in a professional way. (3.1)**  **-Develop self-study skills. (3.3, 3.5)**  **-Act with responsibility during the practical classes. (3.3)** | | | |
| (ii) Teaching strategies to be used to develop these skills and abilities  **-Students will be assigned to a particular microscope during the practical sessions and will be held responsible of their microscopes.**  **-Students are asked to share information and work with their colleagues.**  **-Assignments will be used as a mean of developing self study and** **team work skills with the aid of virtual microscope.** | | | |
| (iii) Methods of assessment of students interpersonal skills and capacity to carry responsibility  **These skills are not integral part of this course .However assignments evaluation may reflect the students’ ability to work in team and have the self study skills.** | | | |
| **d. Communication, Information Technology and Numerical Skills** | | | |
| (i) Description of the skills to be developed in this domain.  **The student should be able to:**  **-Communicate and participate in class activities and discussions. (4.1)**  **-Use scientific web directories to find information during preparation of their assignments. (4.2)**  **-Use the virtual microscope and web based color atlas.** (4.3) | | | |
| (ii) Teaching strategies to be used to develop these skills  **-All students will have an opportunity to personally interact and respond to answer questions during sessions.**  **-Computer based Assignments (where student use basic scientific search tools via internet).** | | | |
| (iii) Methods of assessment of students numerical and communication skills  **-Observe and evaluate with checklist his performance and attitude during lectures and practical sessions.**  **-Computer based assignments are collected and graded to reflect how efficient they are in obtaining scientific information from internet web sources.** | | | |
| **e. Psychomotor Skills (if applicable)** | | | |
| (i) Description of the psychomotor skills to be developed and the level of performance required   * **Not applicable in our course.** | | | |
| (ii) Teaching strategies to be used to develop these skills  Not applicable in our course | | | |
| (iii) Methods of assessment of students psychomotor skills  Not applicable in our course | | | |
| 5. Schedule of Assessment Tasks for Students During the Semester | | | |
| Assessment | Assessment task  (e.g. essay, test, group project, examination etc.) | Week due | Proportion of Final Assessment |
| 1 | **First continuous assessment** | 8 | 10 |
| 2 | **Second Continuous assessment** | 16 | 10 |
| 3 | **Third Continuous assessment** | 26 | 10 |
| 4 | **Mid Term Practical Examination** | 26 | 10 |
| 5 | **Assignments and Quizzes** |  | 5 |
| 6 | **Weekly performance during Practicals** |  | 5 |
| 7 | **Final Practical Examination** | 30 | 10 |
| 8 | **Final Written Examination** |  | 40 |

**D. Student Support**

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| 1. Arrangements for availability of faculty for individual student consultations and academic advice. (include amount of time faculty are available each week)   * **Since there are enough instructors for teaching the lectures in addition to the practical’s in both Male and Female campuses. Office hours for each instructor were scheduled in the MUC or DUC campuses during the sessions or on other previously arranged days to assist the males and female students separately on appointed days and time indicated in their timetables and made known to the students of the time and place in each campus.** * **The course directors' and contributors' email addresses and office telephone numbers are made available to all students.** |

**E. Learning Resources**

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| **1. Required Text(s)**   * + **James K. Avery and Daniel J Chiego Jr.**   Essentials of Oral Histology and Embryology – A clinical approach  4th Edition, 2013. Mosby Co., Elsevier.   * + **Ten Cate AR**   Oral Histology, Development, Structure and Function  8th  Edition, 2012. C. V. Mosby Co. Elsevier |
| 2. Essential References /and Atlas   * + **James K. Avery**   Oral Development and Histology  3rd edition, 2002. Thieme Medical Publishers, Inc. or latest Edition if present   * + **Berkovitz BKB, Holland GR and Moxham BJ**   A colour Atlas and Textbook of Oral Anatomy, Histology and Embryology 4th edition , 2009, Wolfe Medical Publications Ltd. |
| 3- Recommended Books and Reference Material (Journals, Reports, etc)   * **Junqueira LC and Carneiro J.**   Basic Histology, Text and Atlas. 13th Edition, 2013 – Lange  Medical Books/McGraw – Hill.   * **Sadler T W**   Langman’s Medical Embryology . 12th Edition, 2011. Lippincott Williams & Wilkins . |
| 4-.Electronic Materials, Web Sites , important site links , etc   * The students are asked to search in the different scientific websites, through the KSU digital library. in addition to various specialized oral histology and Embryology websites and short documentary videos available such as Early Embryology, formation of the neural crest cells, tooth development etc. or those stated in their recommended textbook. * The course webpage is at https://lms.ksu.edu.sa . Any course announcements will be posted on this site. In addition grades and other course resources will be available. * Students will be registered at http://sms.ksu.edu.sa to receive the course news and announcements on their mobile devices. * Additional helpful web resources:   vMic Oral histology at http://oralhisto.unibas.ch  Anatomy TV at http://www.anatomy.tv/default.aspx |
| 5- Other learning material such as computer-based programs/CD, professional standards/regulations  A colored practical manual in addition to notes and CDs are provided when needed  For the use of the virtual microscope, the students are asked to download the image scope software on their laptops and to bring along during the practical sessions, so that they visualize the scanned slides in groups and discuss it with their instructors. |

**F. Facilities Required**

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| Indicate requirements for the course including size of classrooms and laboratories (ie number of seats in classrooms and laboratories, extent of computer access etc.) |
| 1. Accommodation (Lecture rooms, laboratories, computer based lecture or laboratory facilities etc.)  **MUC : To accommodate around 40 – 50 Female students**  **DUC : To accommodate around 80 – 90 Male students** |
| 2. Computing resources  -**Tutorials**  **-CPCs**  **-Web based assignments**  **-Digital library**  **-Virtual microscope** |
| 3. Other resources (specify –e.g. If specific laboratory equipment is required, list requirements or attach list)  **-Light Microscopes needed for the practical glass slide sessions.**  **-Data projector needed for the CPC and tutorial sessions to project the slides in the lab.**  **-Visual microscope is used to facilitate the teaching abilities in the absence of enough teaching staff to cover the outnumbered students in both campuses.** |

**G. Course Evaluation and Improvement Processes**

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| 1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching  **By the end of each course, the students are asked to evaluate the course through a questionnaire** |
| 2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department   * **Personal evaluation of the students based on their understanding performance and grades** * **Faculty evaluation by university.** |
| 3  Processes for Improvement of Teaching   * **Updating the information on a regular yearly basis with increase of the clinical application of the various hard and soft tissues** * **Teaching skills will be improved by continuous reading in teaching methodology field and attending courses or workshops in this regard.** |
| 4. Processes for Verifying Standards of Student Achievement (e g. check marking by an independent faculty member of a sample of student work, periodic exchange and remarking of a sample of assignments with a faculty member in another institution)  **The exam papers are held available for remarking and checking by other colleagues and specially by the head division and /or chairman on demand when needed specially for the weak students , or students who have failed in more than one course** |
| 5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.  Carried out through the division and department |

**253 DDS – Course Specification/ Updated Aug 2013**