**National Commission for Academic Accreditation & Assessment**

**Course Specification**

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| Institution: University of Dammam |
| College/Department : Faculty of Dentistry/ Restorative Dental Sciences |

**A Course Identification and General Information**

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| 1. Course title and code: Introduction to Operative Dentistry RDS 242 |
| 2. Credit hours 02 |
| 3. Program(s) in which the course is offered.(If general elective available in many programs indicate this rather than list programs) Bachelor of Dental Surgery |
| 4. Name of faculty member responsible for the course  Dr. Abeer Elsayed ElEmbaby BDS, MDS, PhD |
| 5. Level/year at which this course is offered: Third Year dental students /First Semester |
| 6. Pre-requisites for this course (if any)  ENGL 132: Advanced English & Dental Terminology, RDS 231: Basic Dental Material Sciences, RDS 342: Dental Biomaterial Science, RDS 232: Dental Morphology |
| 7. Co-requisites for this course (if any) |
| 8. Location if not on main campus  College of Dentistry |

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| 1. **Objectives Summary** of the main learning outcomes for students enrolled in the course.   This course introduces to Operative Dentistry as a basic branch of Oral& dental health care. Basic terminology in operative dentistry, carious and non-carious lesions affecting hard tooth structure, instruments and instrumentation will be introduced. The basic skills of dental surgical cutting procedures and cavity preparation based on fundamental recognition of the principles and steps of these procedures will be gained. Effective communication by using the proper nomenclature and vocabulary used in operative dentistry will be mastered as it is a fundamental prerequisite for effective communication during successive courses in operative dentistry and throughout the career. This course is based upon a theoretical (didactic) component and a practical component. The goal is to guide the student reaching an acceptable level of competency in both components as well as identifying the basic problems in operative dentistry and share in decision-making. |
| 2. Briefly describe any plans for developing and improving the course that are being implemented. (eg increased use of IT or web based reference material, changes in content as a result of new research in the field)  -Interactive learning with blackboard through given homework and open discussions  - Three different assignments will be assigned; each group of the students will present and discuss their assignment with the class and their teacher. |

**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 | | | |
| List of Topics | No of  Weeks | Contact hours Lectures+ Practical |  |
| **Introduction, Syllabus & assignment distribution and Introduction to operative dentistry; definition, objectives &scope** | 1 | 1 | Dr Abeer |
| **Cavity classification and nomenclature** | 1 | 1 | Dr Zubir |
| **Lesions affecting hard dental tissues** | 1 | 1 | Dr Talal |
| **Operator position** | 1 | 5 | Dr Talal |
| **Basic principles of instruments and instrumentation** | 4 | 8 | Dr Moataz |
| **Assignment discussion** | 1 | 1 | Dr Abeer |
| **Tooth form &occlusion** | 1 | 3 | Dr Zubir |
| **Black 's principles of cavity design and preparation** | 2 | 6 | Dr Inas |
| **Black 's Class I cavities for dental amalgam** | 2 | 18 | Dr Rasha |
| **Revision** | 1 | 1 | Dr Abeer |
| **Total** | 15 | 45 |  |

**Lectures ILO’s**

Introduction to operative dentistry (One lecture):

At the end of this lecture the students must be able to:

-Define operative dentistry; its role in health care sciences and its scope beginning with diagnosis, prevention, interception, preservation, restoration and maintenance.

Cavity classification & nomenclature (one lecture):

-Describe different tooth numbering systems.

-Compile the nomenclature of tooth surface.

-Demonstrate the proper terminology and nomenclature of the cavity; cavity wall, floors, line angles, point angles and cavo-surface angles.

-Classify cavity preparations according to the Black's Classification.

Lesions affecting hard dental tissues (one lecture):

-Define carious and non-carious lesions

-Predict the clinical sites for caries initiation, pits and fissures, smooth enamel surfaces, and root surface.

-Assess the extent of pathological damage of tooth structure due to caries and classification of carious lesions.

-Identify the non-carious lesions and their etiology; attrition, abrasion, abfraction, erosion, malformed, traumatized or fractured teeth, nonhereditary enamel hypoplasia, enamel hypocalcification, and tooth discoloration.

Operator position (one lecture):

-Identify positioning the patient, the dentist, and the dental nurse

-Demonstrate sitting of work-surfaces and instruments

-Maintain a clear working field for the dentist and instrument transfer 79

-Describe protection and safety measures

Basic principles of instruments & instrumentation (four lectures):

-Compile the materials used in manufacturing dental instruments.

-Explain different methods of instrument grasp.

-Discuss the sharpening, sterilization and storage methods of dental instruments.

-Identify the types of handpieces available for operative procedures

-Describe the difference between "high speed" and "low speed" handpieces

-Recognize the general classifications and nomenclatures of dental instruments.

- Describe different parts of hand instruments

-Define the meaning of the number formulas utilized for hand instruments

-Identify the classifications of hand instruments by the intended use of the instrument

- Recognize the basic classification of rotary cutting instruments.

-Identify the three bur shank designs utilized with these various handpieces.

-Describe the ISO classification system for bur shapes and sizes

Tooth form &occlusion (One lecture):

-Recognize the physiology of the tooth form; gingiva, preservation of the periodontioum , contour, height of epithelial attachment, marginal ridge, embrasures , interproximal spaces , proximal contact area.

-Describe why proper anatomical form is essential in tooth restoration; contacts , embrasures, height of contour.

-Identify how the structure of enamel and dentin relate to the masticatory forces and influence cavity design.

-Compile the relation between occlusion and restorative dentistry in terms of defintions, centric relation, angles classification for interarch relationship , occlusal scheme , various mandibular movements and features of an ideal occlussion.

-Assess the factors of occlusion affecting restorative dentistry .

Black's principles of cavity design and preparation (Two lectures):

-Define the terms used to describe cavity preparations.

-Describe the steps of cavity preparation and their proper sequence.

-Reasonably compile the basic principles in cavity preparations and the instrumentation used.

-Describe the principles concerning adequate dentinal support and proper cavo-surface angles in cavity preparations.

-Relate the basic mechanical and biological principles to the restorative procedure(s) to be undertaken.

Black's Class I cavities for dental amalgam (Two lecture).

-Describe the definition, classification of Black's Class I

-Assess the different designs of Class I (simple, Compound, complex)

-Demonstrate the steps of Class I preparation

-Apply the principle of cavity design on Black's Class I cavity preparation for amalgam restoration.

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| 2 Course components (total contact hours per semester): | | | | |
| Lecture:  15 hours | Tutorial: | Laboratory  30 hours | Practical/Field work/Internship | Other: |

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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) |

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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** |
| 1. Description of the knowledge to be acquired   The course addressed the following knowledge skills :   1. **Describe normal tooth form, teeth alignment, inter-occlusal relations and para-functional habits.**    1. Recognize the physiology of the tooth form; gingiva, preservation of the periodontioum , contour, height of epithelial attachment, marginal ridge, embrasures , interproximal spaces , proximal contact area.    2. Describe different tooth numbering systems.    3. Describe why proper anatomical form is essential in tooth restoration; contacts, embrasures, height of contour.      * 1. Identify how the structure of enamel and dentin relate to the masticatory forces and influence cavity design.  1. **Describe the various theories, concepts, techniques and principles of operative dentistry and endodontics.**     1. Define operative dentistry; its role in health care sciences and its scope beginning with diagnosis, prevention, interception, preservation, restoration and maintenance.    2. Classify cavity preparations according to the Black's Classification.    3. List the parts of most hand instruments utilized in operative dentistry.    4. Identify the classification of hand instrument by the intended use of the instrument.    5. Define the meaning of the number formulas utilized for hand instruments    6. Identify the types of handpiece available for operative procedures, different design and methods of using different rotary instruments.    7. Describe the steps of cavity preparation and their proper sequence.    8. Describe the principles concerning adequate dentinal support and proper cavosurface angles in cavity preparations.    9. Describe the definition, classification of Black's ClassI   22.10. Describe the steps of preparation of different designs of Class I   1. **Discuss a range of treatment options in operative dentistry related to lesions affecting hard tooth structures, defective restorations and emergencies.**    1. Identify carious and non carious lesions |
| Teaching strategies to be used to develop that knowledge  Lectures   * Homework * Assignments |
| Methods of assessment of knowledge acquired   * MCQs * Short essay questions. * Assignments Discussion and evaluation |
| **b. Cognitive Skills** |
| 1. Description of cognitive skills to be developed 2. **Choose techniques, materials and instruments for individual cases indicated for prothodontics, restorative and endodontic.**   16.1. Apply principles of tooth preparation for optimal Class I preparation.  16.2. Choose the appropriate instruments during cavities preparation.   1. **Integrate modern biomechanical and esthetic principles for optimal dental treatment outcomes.**    * 1. Demonstrate the mechanical and biological principles that determine the restorative procedure(s) to be undertaken. |
| (ii) Teaching strategies to be used to develop these cognitive skills   * Lectures * Homework * Assignments * Small group teaching |
| Methods of assessment of students cognitive skills   * Two mid-term exam * Final exams * Assignments Discussion and evaluation |
| **c. Interpersonal Skills and Responsibility** |
| (i) Description of the interpersonal skills and capacity to carry responsibility to be developed  - Incorporate ergonomic principles into the performance of dental procedures to promote productivity.  - Employ quality control and quality improvement principles in monitoring self- and- practice performance. |
| (ii) Teaching strategies to be used to develop these skills and abilities  Chair side teaching |
| (iii) Methods of assessment of students interpersonal skills and capacity to carry responsibility  Check point evaluation form  Self evaluation form |
| **d. Communication, Information Technology and Numerical Skills** |
| (i) Description of the skills to be developed in this domain.  - Use information technology (IT) for effective communication with peers and seniors.  - Employ IT in disseminating oral health information |
| Teaching strategies to be used to develop these skills  Chair side teaching |
| (iii) Methods of assessment of students numerical and communication skills  Group discussion |
| **e. Psychomotor Skills (if applicable)** |
| 1. Description of the psychomotor skills to be developed and the level of performance required   **7. Perform isolation of the operative and endodontic fields.**  7.1. Place clinically acceptable rubber dam isolation [on a manikin]   1. **Perform cavity preparation designs for various restorative materials following current modern biomechanical and esthetic principles.**   8.1. Demonstrate proper seat position for the operator   * 1. Practice hand-piece grip as well as supported controlled application of the hand pieces.   2. Perform Class I cavity preparation on ivory teeth following the principles of tooth preparation.   3. Undertake all manikin lab procedures in a proper position and approach to lab manikin, accomplishing the cutting procedure and accomplishing the restorative procedure in a competent satisfactory quality outcome |
| Teaching strategies to be used to develop these skills  -Regular demonstrations  -Simulation exercised  -Supervised practice |
| (iii) Methods of assessment of students psychomotor skills  -Continuous assessments on the students’ practical performance.  -Progress evaluations  -Practical requirements  -Self and supervise evaluation for each assigned exercise  -Two practical exams. |

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| Assessment | Assessment task (eg. essay, test, group project, examination etc.) | Week due | Proportion of Final Assessment |
| 1 | First midterm exam | 5 | 10% |
| 2 | Second midterm exam | 8 | 10% |
| 3 | Department Discretion (Assignments and pop quizzes) | Continuous assessments | 5% |
| 4 | Practical evaluation /lab test | 9 | 5% |
| 5 | Requirements evaluation | 14 | 30% |
| 6 | Final practical exam | 14 | 10% |
| 7 | Final written exam | 15 | 30% |

**D. Student Support**

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| 1. Arrangements for availability of teaching staff for individual student consultations and academic advice. (Include amount of time teaching staff are expected to be available each week)  Teaching staffs are available for students consultation in their assigned office hours |

##### E Learning Resources

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| 1. Required Text(s)  Sturdevant's Art and Science of Operative Dentistry (Roberson, Sturdevant's Art and Science of Operative Dentistry) (2006), by Theodore Roberson, Harold O. Heymann , Edward J. Swift. |
| 2. Essential References.  Fundamentals of Operative Dentistry A Contemporary Approach \_ 3rd edition (2006), by James B. Summitt, J. William Robbins, Thomas J. Hilton, Richard S. Schwartz, et al. |
| 3- Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)  Operative dentistry: Modern Theory & Practice 1995 ( Marzouk) .  Additional resources provided by the contributing Faculty Members. |
| 4-. Electronic Materials, Web Sites etc  Suggested by teaching staff members. |
| 5- Other learning material such as computer-based programs/CD, professional standards/regulations |

**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, etc.)  Wi-Fi access |
| 2. Computing resources |
| 3. Other resources (specify --eg. If specific laboratory equipment is required, list requirements or attach list)   * Operative cassette * Complete rubber dam set * Ivory teeth * Low speed hand pieces   - Low speed carbide burs in different sizes and shape |

**G Course Evaluation and Improvement Processes**

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| 1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching   * Exam analysis report * Students survey |
| 2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department |
| 3 Processes for Improvement of Teaching  Attending faculty member improvements courses and workshop |
| 4. Processes for Verifying Standards of Student Achievement (eg. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)  Check marking of student works by an independent staff member |
| 5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. |