



King Saud University
College of Dentistry
Department of Prosthetic Dental Sciences

SDS 333

Preclinical Fixed Prosthodontics

DR. EMAN ALHAMDAN

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Course Director - MUC

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Course Co-Director-MUC

**ACADEMIC YEAR
1433 /1434H (2012/2013G)**

COURSE NO. : SDS 333

**COURSE TITLE : PRECLINICAL FIXED
PROSTHODONTICS**

CREDIT HOURS : 6 (2L+4P)

PREREQUISITES : 212 SDS & 213 RDS

COURSE DESCRIPTION:

This is a one year course during the Third Year. It is an introductory course to Fixed Prosthodontics. The course represents the orientation phase to the discipline of fixed prosthodontics (FP). It provides a structured framework for the students to learn the scientific basis and the fundamental principles of FP.

It prepares the student for the practice of sound clinical FP through a patient simulation phase of mechanical and technical procedures.

COURSE OBJECTIVES:

Upon completion of this course, the student will:

1. Understand the nomenclature and instrumentation used in clinical dentistry.
2. Develop basic psychomotor skills for clinical dentistry.
3. Use management and clinical self-evaluation skills in delivering clinical dental care.
4. Apply basic occlusal function and stability principles to restorative procedures.
5. Apply factors of biological and mechanical design for the preparation of teeth for extracoronal cast gold, porcelain fused to metal and all ceramic restorations.
6. Apply factors of biological and mechanical design for complex foundational restorations.

COURSE TOPICS:

1st Semester

1. Introduction to the course. Alginate impression and diagnostic casts
2. Introduction to Fixed Prosthodontics, terminology and treatment planning for single tooth restoration
3. Fundamentals of Occlusion
4. Articulators

5. Principles of tooth preparation
6. Retention and resistance and its theoretical and practical attainment
7. Metal ceramic crown preparation
8. Treatment planning for the replacement of missing teeth
9. Introduction to ceramics and all ceramic crowns
10. CAD/CAM systems
11. Impressions
12. Working cast and dies
13. Wax patterns
14. Wax-up procedure, cut-back and framework design for metal ceramic restoration
15. Investing and Casting

2nd Semester

16. Preparation for porcelain laminate veneers
17. Preparation of metal coping for porcelain application
18. Porcelain application, staining, glazing and polishing of metal ceramic restoration
19. Alloys used in fabricating metal ceramic restoration
20. Fitting, finishing and delivery of cast restorations
21. Direct provisional restorations
22. Provisional restorations
23. Pontic design
24. Solder joints and other connectors
25. Preparation of extensively damaged vital teeth
26. Restoration of endodontically treated teeth – Part 1
27. Restoration of endodontically treated teeth – Part 2
28. Resin bonded fixed partial dentures

INSTRUCTIONAL METHODS:

- Didactic Lectures
- Patient Simulation Clinic (laboratory) and Hands-on Practical Sessions

EVALUATION AND ASSESSMENT:

The students have to pass both parts separately. Failure in any one of them will result in failure of the whole course.

Full rotation of the course contributors will be scheduled to give every student the opportunity to be exposed to all instructors. The grading criteria for projects and procedures, according to which the student's work is evaluated, are included within these guidelines. The course grades earned will be calculated as a weighted average.

Continuous Assessment:	60%
1. Practical continuous assessment	10%
2. Practical examinations (3 sets)	30%
3. Mid-year didactic exam	10%
4. Quizzes	10%
Final Exams:	40%
• Final Practical Exam	20%
• Final Didactic Written Exam	20%
TOTAL GRADE	100%

COURSE PROTOCOL:

1. ATTENDANCE

- Attendance to the lecture and patient simulation clinical sessions are mandatory and of primary importance.
- Being ten (10) minutes late to the lecture will be considered as absent and 15 minutes late to the session will also be considered as being absent.
- Twenty-five percent (25%) of absence from the lecture/patient simulation clinic will deprive the students from taking the final exam (university rules and regulations).
- Work missed due to unexcused absences will receive a "0" grade if not finished by the assigned time.
- In order for an absence to be excused, it must be approved by the vice dean for academic affairs on the day of the absence.
- All projects must be signed by your Instructor prior to request of an excused absence.
- Past performance on daily work and the reason for the absence will be taken into consideration when considering your request.

2. EXAMINATION

- There will be a mid-year Didactic exam.
- Quizzes will be given as indicated in the schedule or at the course director's discretion. No-make ups will be allowed for quizzes that are missed.
- There will be three (3) practical examinations and a final practical exam as scheduled. No make-ups will be allowed for practical exams missed.

3. CHEATING

- Cheating will not be tolerated. Students found cheating during the quizzes and the mid-year exam will be given an automatic failure. An automatic failure in the course will be given to those having their work made by someone else.
- During practical examinations you are not allowed to communicate or look at others or their work. You will always work with dentoform in the stand and in a correct position. You are not to remove or change teeth once a practical exam has started without one of the Instructor's approval. Lack of observation of any of these rules or additional rules that may be given during a practical exam, will constitute an automatic failure.

4. PROFESSIONALISM

- One of the learning objectives of this course is professionalism and professional responsibility. Cleanliness and organization are critical in the delivery of quality health care. Cleanliness in attire will be evaluated daily. Maintain a clean professional atmosphere, personally and in the work area. It is your responsibility to keep it clean. Throw all waste into proper waste receptacles. If a student is observed, leaving waste on the benches and/or floor, including pour-up areas and general areas, they will be warned. If immediate corrective action is not taken, points will be deducted.
- Students must follow the infection control protocol. Every student should wear the clinical uniform adopted by the school. Also, protective glasses or shields must be used during the use of rotary instruments.

REQUIRED TEXTBOOKS:

Fundamentals of Fixed Prosthodontics (Third Edition) Herbert T. Shillingburg, Sumiya Hobo, Lowell Whitsett, Richard Jacobi and Susan Brackett. Quintessence Publishing Co., 1997.

Additional Reading Assignments may be given by different lecturers for certain topics.

SDS 333

1st Semester

1st Week

1-2 September 2012

LECTURE NO. 1

Dr. Eman AlHamdan

TITLE: Introduction to the course

⇒ **Introduction and Orientation**

SIMULATION CLINIC NO. 1

Equilibration of dentoform, alginate impression of U/L dentoform model, pouring & trimming of casts

SIMULATION CLINIC NO. 2

CONTINUE: Equilibration of dentoform, alginate impression of U/L dentoform model, pouring & trimming of casts

8-9 September 2012

LECTURE NO. 2

Prof. Mohiddin Dimashkieh

TITLE: Terminology and treatment planning (Chapter 1,6 &7).

TOPICS:

- Terminology
- Factors affecting the selection of material and design consideration
 1. Destruction of tooth structure
 2. Esthetics
 3. Plaque control
 4. Financial consideration
 5. Retention
- Intra-coronal restoration
- Extra-coronal restoration
- Options of treatment including dental implants
- Selection of type of prosthesis:
 1. RPD
 2. Conventional FPD
 3. Resin bonded FPD
 4. Implant supported FPD
 5. No prosthetic treatment
- Abutment evaluation:
 1. Crown/root ratio
 2. Root configuration
 3. Periodontal ligament area
- Biomechanical considerations
- Special problems and management
 1. Pier abutments
 2. Treated molar abutments
 3. Canine replacement FPD
 4. Cantilever FPD

SIMULATION CLINIC NO. 4

CONTINUE: Mounting of upper and lower cast on whip-mix articulator

SIMULATION CLINIC NO. 3

Mounting of upper and lower cast on whip-mix articulator

SDS 333

3rd Week

15 September 2012

LECTURE NO. 3

Dr. Eman AlHamdan

TITLE: Fundamentals of Occlusion (Chapter 2, pp 54-55)

TOPICS:

- ⇒ Centric relation
- ⇒ Mandibular movements
- ⇒ Occlusal interferences
- ⇒ Organization of occlusion
- ⇒ Definition & importance of anterior guidance
- ⇒ Components of anterior guidance
- ⇒ Influence on posterior tooth morphology
- ⇒ Steps in the fabrication of custom anterior guidance table

SIMULATION CLINIC NO. 5+6

**Fabrication of custom incisal guide table
Fabrication of maxillary custom tray**

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4th Week

22-23 September 2012

LECTURE NO. 4

Dr. Eman AlHamdan

TITLE: Articulators (Chapter 3).

TOPICS:

- Introduction
- Arcon vs. non-arcon (e.g. Whipmix & Hanau)
- Facebow (Arbitrary & Kinematic)

SIMULATION CLINIC NO. 7

Diagnostic wax-up

SIMULATION CLINIC NO. 8

CONTINUE: Diagnostic wax-up

29-30 September 2012**LECTURE NO. 5****Dr. Afnan AlFouzan****TITLE: Principles of tooth preparation (Chapter 9+ pp139-141)****TOPICS:**

- ⇒ Preservation of tooth structure
- ⇒ Retention and resistance (short overview)
- ⇒ Structural durability
 1. Occlusal reduction
 2. Functional cusp bevel
 3. Axial reduction
- ⇒ Marginal integrity: finish line configuration
- ⇒ Preservation of the periodontium
- ⇒ Preparation for full veneer crowns
- ⇒ Indications
- ⇒ Advantages/disadvantages
- ⇒ Tooth preparation procedure

QUIZ #1**SIMULATION CLINIC NO. 9****DEMONSTRATION: Full veneer crown preparation of #37****SIMULATION CLINIC NO. 10****Full veneer crown preparation of #35**

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6th Week

6-7 October 2012

LECTURE NO. 6

Dr. Afnan AlFouzan

**TITLE: Retention and resistance and its theoretical and practical attainment
(Chapter 9(pp. 119-125))**

TOPICS:

- Taper
- Length
- Freedom and displacement
- Substitution of internal features
- Path of insertion

SIMULATION CLINIC NO. 11

Preparation of complete veneer crown for #16

SIMULATION CLINIC NO. 12

CONTINUE: Preparation of complete veneer crown for #16

SDS 333

7th Week

13-14 October 2012

LECTURE NO. 7

Dr. Eman AlHamdan

TITLE: Metal ceramic crown preparation (pp. 142-151)

TOPICS:

- Definition of metal ceramic crown
- Advantages
- Indication and contraindication
- Steps in the preparation of anterior and posterior metal ceramic crown
- Types of facial finish margin used in metal ceramic crown preparation

SIMULATION CLINIC NO. 13

DEMONSTRATION: Metal ceramic crown preparation #11

SIMULATION CLINIC NO. 14

Metal ceramic crown preparation of #13

HAJJ VACATION

SDS 333

8th Week

3-4 November 2012

LECTURE NO. 8

Dr. Eman AlHamdan

TITLE: Pontic Design (pp. 485-502)

TOPICS:

- Definition
- Ideal requirement
- Different pontic designs
- Pontic materials
- Biological consideration
- Mechanical consideration
- Esthetic consideration
- Pontic modification
- Post-insertion hygiene

SIMULATION CLINIC NO. 15

Preparation of metal ceramic crown on tooth #33

SIMULATION CLINIC NO. 16

Preparation of metal ceramic crown on tooth #38

10-11 November 2012**LECTURE NO. 9****Dr. Sara AlTaweel****TITLE: Introduction to ceramics and All ceramic crowns (pp. 151-153 & 433-436)****TOPICS:**

- ⇒ History & composition of porcelain
- ⇒ Introduction to all ceramic crowns
- ⇒ Advantages and disadvantages
- ⇒ Different types of all –ceramic crowns
- ⇒ Indications and contraindications
- ⇒ Steps in the preparation of all ceramic crown

SIMULATION CLINIC NO. 17**DEMONSTRATION: Preparation of all ceramic crown on tooth #21****SIMULATION CLINIC NO. 18****DEMONSTRATION: Preparation of all ceramic crown on #26**

SDS 333

10th Week

17-18 November 2012

LECTURE NO. 10

Dr. Sara AlTaweel

TITLE: CAD/CAM Systems

TOPICS:

- Introduction to CAD/CAM
- Advantages and disadvantages
- Indications and contraindications
- Different available systems
- Steps in the preparation

QUIZ #2

SIMULATION CLINIC NO. 19

Preparation of all ceramic 3-unit FPD on #44-46

SIMULATION CLINIC NO. 20

PRACTICAL EXAM #1

24-25 November 2012

LECTURE NO. 11**Dr. Hanan AlOtaibi****TITLE: Impressions (Chapter 17(pp. 281-304)).****TOPICS:**

- Definition
- Ideal requirements of a good impression
- Comparison of impression materials:
- Wettability
- Viscosity
- Cost
- Custom trays
- Advantages and disadvantages of the commonly used impression materials in fixed prosthodontics (impression making of polyvinyl siloxane only)
- Disinfection of impressions

SIMULATION CLINIC NO. 21**DEMONSTRATION: making of final maxillary impression for tooth #21 and pouring of the impression with die stone****SIMULATION CLINIC NO. 22****CONTINUE: making of final maxillary impression for tooth #21 and pouring of the impression with die stone**

SDS 333

12th Week

1-2 December 2012

LECTURE NO. 12

Dr. Eman AlHamdan

TITLE: Working cast and dies (Chapter 18(pp. 309-333)).

TOPICS:

- ⇒ Requirements for a good cast
- ⇒ Definition of a working cast and a die
- ⇒ Basic working cast and die systems
 1. Working cast with a separate die
 - Advantages and disadvantages
 2. Working cast with a removable die
 - Advantages and disadvantages
 - Requirements
 - Technique of the pindex system
 3. Preparation of a die

SIMULATION CLINIC NO. 23

DEMONSTRATION: Start pindexing for tooth #21

SIMULATION CLINIC NO. 24

Complete pindexing for tooth #21

SDS 333

13th Week

8-9 December 2012

LECTURE NO. 13

Dr.Hanan AlOtaibi

TITLE: Wax patterns (Chapter 19(pp. 335-353)).

TOPICS:

- Direct technique
- Indirect technique
- Wax pattern fabrication
 1. Coping
 2. Axial contour and emergence profile
 3. Occlusal morphology
 - Cusp to marginal ridge arrangement
 - Cusp to fossa arrangement (only description, advantages and disadvantages (table 19-1))
 4. Marginal finishing

SIMULATION CLINIC NO. 25

DEMONSTRATION: Mounting of maxillary working cast and starting wax-up for tooth #21 to full contours

SIMULATION CLINIC NO. 26

CONTINUE: Mounting of maxillary working cast and wax-up for tooth #21 to full contours

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14th Week

15-16 December 2012

LECTURE NO. 14

Dr. Eman AlHamdan

TITLE: Wax-up procedures, cut-back & framework designs for metal ceramic restoration (pp. 457-468 & 502-506)

TOPICS:

- ⇒ Significance of wax-up to full contours followed by cut-back
- ⇒ Coping design for single restoration and FPD
- ⇒ All wax technique
- ⇒ Plastic shell technique
- ⇒ Design for metal ceramic FPD

QUIZ #3

SIMULATION CLINIC NO. 27

DEMONSTRATION: Start with cut-back on tooth #21

SIMULATION CLINIC NO. 28

PRACTICAL EXAM NO. 2

SDS 333

15th Week

22-23 December 2012

LECTURE NO. 15

Dr. Amina Uzma

TITLE: Investing and casting (Chapter 21(pp. 365-378)).

TOPICS:

- Requirements of an investment material
- Shrinkage compensation
- Gypsum bonded investment
- Phosphate bonded investment
- Sprue former attachment (diameter, length & location)
- Investing procedure & cleaning of casting
- Common casting defects and their causes

SIMULATION CLINIC NO. 29

DEMONSTRATION & VIDEO: Spruing and investing wax pattern #21

SIMULATION CLINIC NO. 30

CONTINUE: Metal ceramic crown preparation #43

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16th Week

29 December 2012

MID YEAR DIDACTIC EXAM

MID YEAR BREAK

SDS 333

2ND SEMESTER

17th Week

26-27 January 2013

LECTURE NO. 16

Dr. Eman AlHamdan

TITLE: Preparation of porcelain laminate veneers (pp. 441-445)

TOPICS:

- ⇒ Introduction to all types of partial veneer crown preparation
- ⇒ Indications and contraindications
- ⇒ Advantages and disadvantages
- ⇒ Materials and equipments
- ⇒ Tooth preparation procedure
- ⇒ Fabrication of provisional restoration

SIMULATION CLINIC NO. 31

DEMONSTRATION: Porcelain veneer preparation on tooth #13-23

SIMULATION CLINIC NO. 32

CONTINUE: Porcelain veneer preparation on tooth #13-23

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18th Week

2-3 February 2013

LECTURE NO. 17

Dr Amina Uzma

TITLE: Preparation of metal coping for porcelain application (pp. 468-470)

TOPICS:

- Rationale of preparation
- Alloy surface treatment
- Heat treatment
- Steps of preparation

SIMULATION CLINIC NO. 33

**DEMONSTRATION & VIDEO: Fitting of coping on the working cast
Finishing the metal coping**

SIMULATION CLINIC NO. 34

All ceramic crown preparation #21, Metal ceramic crown preparation #16

SDS 333

19th Week

9-10 February 2013

LECTURE NO. 18

Dr. Amina Uzma

TITLE: Porcelain application, staining, glazing and polishing of metal ceramic restoration (pp. 471-481)

TOPICS:

- **Layers of porcelain**
- **Procedure of porcelain application**
 1. **Opaque porcelain application**
 2. **Dentin and enamel porcelain application**
- **Shade modification**
- **Porcelain surface treatment**
 1. **Natural glaze or auto glaze**
 2. **Applied over glaze**
 3. **Polishing**

SIMULATION CLINIC NO. 35

DEMONSTRATION & VIDEO: Porcelain application

SIMULATION CLINIC NO. 36

All Ceramic crown preparation #46, Metal ceramic crown preparation #47

SDS 333

20th Week

16-17 February 2013

LECTURE NO. 20

Dr. Amina Uzma

TITLE: Fitting, finishing and Cementation (pp. 385- 397)

TOPICS:

- Significance of finishing and polishing cast restorations
- Armamentarium: different abrasives and polishing
- Procedure of preliminary finishing of metal restorations in sequence (Try-in)
 1. Proximal contacts
 2. Margins (completeness of seating)
 3. Occlusion
 4. Contours
 5. Esthetics

SIMULATION CLINIC NO. 37

DEMONSTRATION & VIDEO: Fitting and Cementation

SIMULATION CLINIC NO. 38

Catch-up session, alginate impression #35-37

SDS 333

21st Week

23-24 February 2013

LECTURE NO. 21

Dr. Eman AlHamdan

TITLE: Direct provisional restorations (pp. 247-255)

TOPICS:

- Indication
- Types of prefabricated direct restoration for anterior and posterior teeth
- Techniques of using prefabricated provisional restoration for anterior and posterior teeth
- Fabrication of direct provisional restoration for an endodontically treated tooth

QUIZ #4

SIMULATION CLINIC NO. 39

DEMONSTRATION: Fabrication of polycarbonate crown on # 21 (Direct technique)

SIMULATION CLINIC NO. 40

DO: Fabrication of ion crown #16 (Direct technique)

SDS 333

22nd Week

2-3 March 2013

LECTURE NO. 22

Dr. Eman AlHamdan

TITLE: Provisional restorations (pp. 225-238)

TOPICS:

- Definition
- Ideal requirements of a good provisional restorations
- Types of provisional restorations prefabricated vs. custom restorations
- Direct, indirect and combination techniques: advantages & disadvantages
- Resins for provisional restorations
- Techniques for fabricating custom made provisional restorations (FPD)
- Cementation

SIMULATION CLINIC NO. 41

DEMONSTRATION: Custom made provisional restoration for tooth #35-37 by the indirect technique

SIMULATION CLINIC NO. 42

CONTINUE: Custom made provisional restoration for tooth #35-37 by the indirect technique

SDS 333

23rd Week

9-10 March 2013

LECTURE NO. 23

Dr. Eman AlHamdan

TITLE: Resin bonded fixed partial dentures (Chapter 28: pp. 537-561)

TOPICS:

- Historical background:
- Rochette bridge
- Maryland bridge
- Cast mesh FPD
- Virginia bridge
- Definition of resin bonded fixed partial dentures
- Advantages and disadvantages
- Indication and contraindication
- Steps in the preparation of resin bonded fixed partial dentures
- Framework fabrication
- Cementation

SIMULATION CLINIC NO. 43

DEMONSTRATION: Custom made provisional restoration for tooth #11-13 by the indirect-direct techniques

SIMULATION CLINIC NO. 44

CONTINUE: Custom made provisional restoration for tooth #11-13 by the indirect-direct techniques

SDS 333

24th Week

16-17 March 2013

LECTURE NO. 24

Dr. Sara AlTaweel

TITLE: Solder joints and other connectors (pp. 509-530)

TOPICS:

- Definition
- Ideal requirements of dental solder
- Uses of dental solder
- Procedure of:
 1. Soldering a fixed partial denture
 2. Adding proximal contacts
 3. Soldering metal ceramic alloys
 - Pre-veneer metal ceramic alloy soldering
 - Post-veneer metal ceramic alloy soldering

SIMULATION CLINIC NO. 45

EXERCISE: Single provisional restoration on tooth #33 by the direct technique

SIMULATION CLINIC NO. 46

EXERCISE: Provisional restoration by the indirect-direct technique #23

MID 2nd SEMESTER BREAK

SDS 333

25th Week

30-31 March 2013

LECTURE NO. 25

Dr. Huda Tulba

TITLE: Preparation of extensively damaged vital teeth (pp. 181-193)

TOPICS:

- Principles of substitution
 1. Box forms
 2. Grooves
 3. Pins
- Bases and cores
- Modifications for damaged vital teeth
- Orthodontic adjuncts to restoring damaged teeth
 1. Regaining interproximal space
 2. Extrusion of teeth

SIMULATION CLINIC NO. 47

PRACTICAL EXAM #3

SIMULATION CLINIC NO. 48

CATCH-UP

SDS 333

26th Week

6-7 April 2013

LECTURE NO. 26

Dr. Huda Tulba

TITLE: Restoration of endodontically treated teeth (Part 1) (pp. 194-201)

TOPICS:

- Rationale of restoring endodontically treated tooth
- Prefabricated dowel with amalgam and resin core
- Esthetic posts
- Fiber post with composite build-up

QUIZ #5

SIMULATION CLINIC NO. 49

DEMONSTRATION: Prefabricated post and amalgam build-up on a posterior endodontically treated tooth

SIMULATION CLINIC NO. 50

CONTINUE: Prefabricated post and amalgam build-up on a posterior endodontically treated tooth

SDS 333

27th Week

13-14 April 2013

LECTURE NO. 27

Dr. Huda Tulba

TITLE: Restoration of endodontically treated teeth (Part 2) (pp. 202-206)

TOPICS:

- Different Parapost system
- Components and its uses
- Custom cast dowel cores (direct/indirect)
- Procedure for preparation of custom dowel core
 1. Canal preparation
 2. Resin pattern fabrication
 3. Finishing and cementation of the custom dowel core

SIMULATION CLINIC NO. 51

DEMONSTRATION: Fabrication of cast post/core pattern on an endodontically treated tooth

SIMULATION CLINIC NO. 52

CONTINUE: Fabrication of cast post/core pattern on an endodontically treated tooth

SDS 333

28th Week

20-21 April 2013

LECTURE NO. 28

Dr. Eman AlHamdan

TITLE: Review and course evaluation

SIMULATION CLINIC NO. 53

Provisional restoration of an Endodontically treated tooth

SIMULATION CLINIC NO. 54

**Demo: Fiber post and composite build-up
Catch-up**

SDS 333

29th Week

27-28 April 2013

SIMULATION CLINIC NO. 55

FINAL PRACTICAL EXAMINATION

Exact date/location will be determined at that time

FINAL WRITTEN EXAMINATION