NATIONAL BOARD FOR TECHNICAL EDUCATION

CURRICULUM AND COURSE SPECIFICATIONS

FOR

HIGHER NATIONAL DIPLOMA [HND]

DENTAL TECHNOLOGY

DECEMBER, 2020.

HIGHER NATIONAL DIPLOMA

1.0 PROGRAMME NOMENCLATURE

Higher National Diploma in Dental Technology

2.0 GOAL

This programme is designed to produce Technologists equipped with the knowledge and skill to plan, collate organize, disseminate monitor and manage vital information required at the local, state and national levels in order to ensure effective and comprehensive national health care delivery

3.0 OBJECTIVES OF THE PROGRAMME

A diplomate of this programme should be able to:

i. Plan and organize health information services in health care delivery system.

ii. Organise and control health records, in health and medical establishments.

iii. Supervise the collecting, storing, retrieved and preservation of health information

iv. Collate, analyse and present health statistical data.

v. Participate in planning quality control, evaluation, researches in health care delivery system and other relevant committees in defining standards for health information

vi. Design, standardize and control health records forms

4.0 LEVEL OF PROGRAMME

Higher National Diploma

5.0 DURATION

The duration of the programme shall be two academic sessions of four semesters

6.0 ENTRY REQUIREMENT

Applicants with the following qualifications may be considered for admission into the Higher National Diploma programme.

I] In addition to the specific entry requirements for the ND programme for Dental Technology, the candidate for the HND programme must meet the following entry requirements for the HND programme:

A.National Diploma Certificate in Health Information Management with a minimum of a lower credit.

B.Evidence of completion of one year relevant work experience in an accredited health institution approved by the Board.

C.Candidates with a Pass (GPA 2.00 - 2.49) at the ND level with two (2) or more years post-ND cognate work experience may be considered for admission into the HND program

7.0 PROGRAMME STRUCTURE

7.0 STAFFING REQUIREMENTS

7.1 Core Teaching Staff

A minimum of four (4) lecturers are required for one stream (40 students). Core teaching staff should possess at least a BSc. in Dental Technology or related discipline.

7.2 Technical Staff

Technical staff should possess ND/HND in Technology or related discipline.

7.3 Headship of the Department

The Head of Department shall;

- Possess not less than a Master's degree in Dental Technology or related discipline.
- Have at least 10 years industrial/teaching experience
- Be a Member of relevant professional body
- Be of the rank of Senior Lecturer or above

7.4 Carrier/Academic Prospects

The diplomats would work as Dental Technologists Officer. They can also proceed for PGD and M.Sc. in Dental Technology or related discipline.

8.0**CURRICULUM**

The curriculum of all HND programmes consists of five main components. These are:

i. General Studies/Education

ii. Basic/Foundation Courses

iii. Professional/Specialized Courses

iv. Electives.

9.0 DURATION

The Higher National Diploma is a two year terminal academic programme.

10.0 CERTIFICATION

A graduand of this programme will be awarded HND in Dental Technology.

11.0 CONDITIONS FOR THE AWARD OF ND CERTIFICATE

Institutions offering accredited programmes will award the Higher National Diploma to candidates who successfully completed the programme after passing the prescribed course work, examinations, diploma project and attendance.

12.0 PROFESSIONAL CERTIFICATION EXAMINATION.

A graduate of the HND Dental Technology programme must have to sit and pass the professional certification examination of the Dental Technologists Registration Board of Nigeria (DTRBN) to be licensed to practice as a Technologist Practitioner in Nigeria.

CURRICULUM TABLE
HND PROGRAMME IN DENTAL TECHNOLOGY

LEVEL: HND I **1ST SEMESTER**

COURSE CODE	COURSE TITLE	L	P	CU	CH	CH/SEM
DTE 311	Science of Dental Materials II	1	1	2	2	30
DTE 312	Fixed Prosthodontics	1	2	3	3	45
DTE 314	Complete Denture Prosthodontics I	1	2	3	3	45
DTE 315	Dental Prosthodontics III	1	2	3	3	45
DTE 316	Functional Anatomy of Mastication, Swallowing and Speech	1	0	1	1	15
DTE 317	Orthodontics Technology I	1	2	3	3	45
DTE 318	Dental Radiology	1	1	2	2	30
STA 224	Biostatistics	2	0	2	2	30
DTS 301	Pharmacology II	2	0	2	2	30
DTS 302	Primary Oral Health Care	2	0	2	2	30

STC 211	Introduction to Microbiology	2	0	2	2	30
	TOTAL					**360**

HND PROGRAMME IN DENTAL TECHNOLOGY

LEVEL: HND I **2ND SEMESTER**

COURSE CODE	COURSE TITLE	L	P	CU	CH	CH/SEM
PLT 211	Polymer Chemistry	1	0	1	1	15
DTE	Digital Dental Technology	2	1	3	3	45
GNS 228	Introduction to Psychology	2	0	2	2	30
DTE 321	Dental Prosthodontics IV	2	0	2	2	30
DTE 322	Orthodontic Technology II	2	0	2	2	30
DTSS 323	Gerontology	2	0	2	2	30
STM 312	Bacteriology	1	1	2	2	30
DTE 321	Dental Health Education & Promotion	1	1	2	2	30
DTS 303	Population studies	1	1	2	2	30
DTS 304	Health Policy & Administration	2	0	0	0	30
	TOTAL					**345**

LEVEL: HND II **1ST SEMESTER**

COURSE CODE	COURSE TITLE	L	P	CU	CH	CH/SEM
DTE 321	Advanced Dental Practice	1	1	3	45	45
NUD 433	Research Methodology	2	-	1	15	15
DTE 411	Complete Denture Prosthodontics II	2	-	2	30	30
DTE 412	Orthodontic Technology (Fixed) II	2	-	2	30	30
DTE 413	Metallic Prosthodontic I	1	-	1	15	15
DTE 414	Ethics and Jurisprudence in Dental Technology	2	-	2	30	30
DTE 415	Science of Dental Material III (Ceramics)	2	-	2	30	30
DTE416	Implantology	2	-	2	30	30
EeD 413	Entrepreneurship Development	2	-	2	30	30
DTE417	Gerodonthology	2	-	2	30	30
	TOTAL					**345**

HND PROGRAMME IN DENTAL TECHNOLOGY

LEVEL: HND II **2ND SEMESTER**

COURSE CODE	COURSE TITLE	L	P	CU	CH	CH/SEM
DTE 421	Introduction to Maxillio Facial Prosthodontics	1	2	3	3	45
		1	2	3	3	45
DTE 423	Fixed Prosthodontics II	1	2	3	3	45
DTE 424	Project	0	6	6	6	90
DTS	Quality Control Assurance	2	0	2	2	30
DTS	CAD/CAM	1	1	2	2	30
	TOTAL					**310**

PROGRAMME: HND Dental Technology				
COURSE TITLE: Science of Dental Materials II				
COURSE CODE: DTE 311				
DURATION	**Lecture:- 1 Hr**	**Tutorial:-**	**Practical:- 1 Hr**	**Total:- 2Hrs/Wk (30Hrs/Sem)**
CREDIT UNITS: 2 CU				

GOAL: This course is designed to develop the students understand and application of dental alloys, modelling and investment materials used in dental technology practices.

GENERAL OBJECTIVES: On completion of the course, the student should be able to:

1.0 Know dental alloys and polymer base materials in dental technology practice
2.0 Understand the effect of heat treatment on the properties of dental alloys
3.0 Understand the materials and techniques for soldering and welding
4.0 Understand the use and importance of investment and modelling materials in dental technology

PROGRAMME: HND Dental Technology						
COURSE TITLE: Science of Dental Materials II	**Course Code: DTE 311**		**Contact Hours: 2Hrs/Wk (30Hrs/Sem)**			
COURSE SPECIFICATION: Theoretical content			**Practical Content:**			
General Objective: 1.0 Know dental alloys and polymer base materials in dental technology practice						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
1.1 Define an alloy 1.2 List the various types of alloys e.g. binary and eutectic 1.3 Describe the components and properties of the alloys in each category in 1.2 above 1.4 Identify commonly used alloys in dental technology practices e.g. gold alloys, chrome-cobalt, etc. 1.5 Explain the choice of alloys used in prosthetic surgery 1.6 Explain the effect of heat treatment on chosen alloys in 1.4 above 1.7 Carry out heat treatment of a name alloy 1.8 Define polymer (with example) 1.9 Describe the components and properties of various polymers in 1.8 above	Define Alloys List Varoius types of alloy. Describe Components of Alloys Describe properties of Alloys. Define polymer	Quintessence of Dental Technology. Alloys Textbooks, Charts and Forms, Reading materials. Polymer Textbooks, Charts and Forms, Reading	Identify commonly used alloys in Dental Technology practices e.g. gold alloys, chrome-cobalt, etc. Define polymer	Define Alloys List Varoius types of alloy. Describe Components of Alloys Describe properties of Alloys.	Quintessence of Dental Technology. Alloys Textbooks, Charts and Forms, Reading materials. Polymer Textbooks, Charts and	Students to define Alloys Students to list types of Alloys Students to list components of Alloys Students to list properties of Alloys Students to define polymer.

1.10 Identify the commonly used polymer in dental technology practices e.g. polymethyl-metacrylate (acrylic) 1.11 Define composite resins 1.12 Describe the constituents and properties of composite resins 1.13 Define the following i. Condensation ii. Polymerization 1.14 Describe the processes involved in condensation and polymerization in relation to dental technology practice	Identify the commonly used polymer in dental technology practices e.g. polymethyl-metacrylate (acrylic)	materials.	Identify the commonly used polymer in dental technology practices e.g. polymethyl-metacrylate (acrylic)		Forms, Reading materials.	Students to identify commonly used polymer in dental technology practices.

General Objective: 2.0 Understand the effect of heat treatment on the properties of dental alloys						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
2.1 Define heat treatment 2.2 Describe the principles of heat treatment 2.3 List alloys that could be heat treated e.g. stainless steel, gold alloys, etc 2.4 Carry out heat treatment of a chosen material 2.5 List the constituents and properties of heat treatment alloys 2.6 List the properties	Define Heat Treatment Describe the principles of heat treatment List the constituents	Textbooks, Charts and Forms, Reading materials.	To define Heat Treatment	Define Heat Treatment Describe the principles of heat treatment Treat a chosen material List the	Textbooks, Charts and Forms, Reading materials.	Students to define Heat Treatment Students to describe the principles of heat treatment. Students to list the constituents and properties of heat

obtainable from the alloys after heat treatment 2.7 Demonstrate with diagrams the grain structure of heat treated alloys	and properties of heat treatment alloys			constituents and properties of heat treatment alloys		treatment alloys.
General Objective: 3.0 Understand the materials and techniques for soldering and welding						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
3.1 Define the following: i. Soldering ii. Speed of soldering iii. Welding iv. Fluxes v. Solder vi. Sweating vii. Spot welding 3.2 Describe the mechanism of "Joining" in soldering 3.3 List the types, composition and properties of fluxes 3.4 Describe the various methods of heating 3.5 Explain the principle of soldering 3.6 List the various types of	Define -Soldering -Speed of soldering -Welding -Fluxes -Solder -Sweating -Spot welding List the types, composition and properties of fluxes	Textbooks, Charts and Forms, Reading materials.	To define Define -Soldering -Speed of soldering -Welding -Fluxes -Solder -Sweating -Spot welding To list the types, composition and properties of	To define Define - Soldering -Speed of soldering -Welding -Fluxes -Solder -Sweating -Spot welding	Textbooks, Charts and Forms, Reading materials.	Students to define terms used in Soldering;- -Soldering -Speed of soldering -Welding -Fluxes -Solder -Sweating -Spot welding Students to list the types, composition and properties of fluxes

solders, composition and their properties 3.7 List the major hand tools and equipment used in soldering 3.8 Solder two joints together 3.9 Explain the general principles of spot welding 3.10 Identify the tools and equipment used in welding	List the major hand tools and equipment used in soldering		fluxes To list the major hand tools and equipment used in soldering			Students to list the major hand tools and equipment used in soldering
General Objective: 4.0 Understand the use and importance of investment and modelling materials in dental technology						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**

4.1 List the constituents and ideal properties of: i. Investment materials ii. Modelling materials 4.2 List various types of investment materials, specifying those for precious and non-precious metals 4.3 List various types of modelling materials. 4.4 Define the following: i. Hygroxopic expansion ii. Thermal expansion iii. Setting expansion iv. Inversion change 4.5 State the uses of modelling materials (give examples e.g. plaster of Paris, stone plaster, etc.)	List the constituents and ideal properties of:- Investment materials Modelling materials List various types of modelling materials. Define the following: Hygroxopic expansion Thermal expansion Setting expansion Inversion change.	Textbooks, Charts and Forms, Reading materials. Gypsum	To list the constituents and ideal properties of:- Investment materials Modelling materials To list various types of modelling materials.	List the constituents and ideal properties of:- Investment materials Modelling materials List various types of modelling materials.	Textbooks, Charts and Forms, Reading materials. Gypsum Textbooks, Charts and Forms, Reading materials. Gypsum	Students to list the constituents and ideal properties of:- -Investment materials -Modelling materials Students to List various types of modelling materials Students to define the following: Hygroxopic expansion Thermal expansion Setting expansion Inversion change.

4.6 Explain the industrial production of plaster of Paris from Gypsum. 4.7 Describe the chemistry of reaction in 4.6 above 4.8 List the composition of dental plaster and stone plaster 4.9 Explain the factors responsible for the setting of plaster of Paris and stone plaster 4.10 State the difference between plaster of Paris and stone plaster 4.11 Describe the procedure for measuring the setting time of plaster of Paris 4.12 Identify the equipment used if measuring the setting time of plaster of Paris	Explain the industrial production of plaster of Paris from Gypsum. Identify the equipment used if measuring the setting time of plaster of Paris	Textbooks, Charts and Forms, Reading materials. Gypsum	To explain the industrial production of plaster of Paris from Gypsum. To identify the equipment used if measuring the setting time of plaster of Paris	Explain the industrial production of plaster of Paris from Gypsum. Identify the equipment used if measuring the setting time of plaster of Paris		Students to explain the industrial production of plaster of Paris from Gypsum. To identify the equipment used if measuring the setting time of plaster of Paris

PROGRAMME: HND Dental Technology				
COURSE TITLE: Fixed Prosthodontics (conservatives)				
COURSE CODE: DTE 312				
DURATION	**Lecture:- 2 Hrs**	**Tutorial:-**	**Practical:- 3 Hrs**	**Total:- 5Hrs/Wk (75Hrs/Sem)**
CREDIT UNITS: 2 CU				
GOAL: This course is designed to enable the student understand the principles of crown and bridge in relation to aesthetic				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				

1.0 Understanding of the terms associated with ceramics and bridgework (Fixed Prosthodontics)

2.0 Know the application of the component parts and types of bridges, inlay and crowns necessary for the fabrication of fixed prosthodontics.

3.0 Understand the shaping of labial, lingual and proximal surfaces in relation to aesthetics, oral hygiene and phonetics

4.0 Know methods of control for dental refractories, waxes and alloys used in crowns and bridges

5.0 Know factors determining selection of alloy types and ceramics in relation to aesthetics and function

PROGRAMME: HND Dental Technology		
COURSE TITLE: Fixed Prosthodontics (conservatives)	**Course Code: DTE 312**	**Contact Hours: 5Hrs/Wk (75Hrs/Sem)**

COURSE SPECIFICATION: Theoretical content			**Practical Content:**			
General Objective: 1.0 Understanding of the terms associated with ceramics and bridgework (Fixed Prosthodontics)						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
1.1 Define and explain the following: i. Crown (Metallic and nonmetallic) e.g. full veneer (shell), partial veneer/ bonded crowns, combination, jacket, Pressables ceramic, post-retained. Temporary crowns etc. ii. Bridges iii. Classes of inlay e.g. Class I, II, III, IV and V iv. Onlays v. Post and core vi. Occlusal rests vii. Pinledge viii. Pontic and pontic designs ix. Abutment x. Cervical margin, gingival margin xi. Dies and master casts; stone dies, amalgam ores electroformed	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

copper dies xii. Copper bonded and tube impressions xiii. Dowel pins/ pindex units, Accutrac trace xiv. Porcelain, porcelain fused to metal restorations xv. Crown contour xvi. Dental cements xvii. Precious and non-precious metals/alloys xviii. Gold finess xix. Metal casting and related procedure xx. Silver plating xxi. Burnishing						

General Objective: 2.0 Know and application the component parts and types of bridges, inlay and crowns necessary for the fabrication of fixed prosthodontics.

Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**

2.1 Define dental bridge 2.2 State indication for construction of dental bridges 2.3 Enumerate the component parts of a dental bridge 2.4 Explain the importance and functions of each component part of dental bridge 2.5 Identify the types of dental bridges available in dentistry 2.6 Identify materials commonly used in the construction of dental bridges e.g. porcelain, precious alloys, etc. 2.7 Describe the procedures employed in the fabrication of bridges taking cognizance of common precautions that normally result into failed restorations 2.8 Construct dental bridges using materials listed in 2.6 above 2.9 Identify common defects that could arise in the	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

construction of bridges and specify reasons						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination
General Objective: 3.0 Understand the shaping of labial, lingual and proximal surfaces in relation to aesthetics, oral hygiene and phonetics						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
3.1 Define and explain the following terms: i. Labial Surface ii. Lingual surface iii. Proximal surface iv. Aesthetics v. Phonetics 3.2 Describe the process of achieving the following surfaces on restorations (ceramics or bonded crowns and shells):	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

i. Labial ii. Lingual iii. Proximal 4.3 Carryout the shaping of surfaces in 4.2 above 4.4 Shape the surface in 4.2 above to reflect aesthetics hygiene and phonetics						

General Objective: 4.0 Know methods of control for dental refractories, waxes and alloys used in crowns and bridges

Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
1.1 State the constituents and properties of the following: i. dental refractories (gypsum bonded investment, silica bonded, phosphate bonded and expansion liquids, rapid cast) ii. Inlay Waxes iii. Dental alloys (Non precious and Precious metals) 1.2 Explain the significant chemical reactions in the materials listed in 1.1 above 1.3 State common factors affecting the setting time of dental	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

refractories during investment e.g. water/solution-powder ratio, mix, temperature, etc. 1.4 Factors responsible for various rate of expansion in dental refractories 1.5 State common factors affecting the manipulation of carving wax e.g. temperature 1.6 Enumerate the factors affecting the properties of alloys used in the bonding of crown and bridges 1.7 Manipulate the factors in 1.6 above to produce well-fitting appliances (bridges and crown)						

General Objective: 6.0 Understand the shaping of occlusion surfaces for inlays and crown to eliminate premature and balancing contacts in eccentric relationship

Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
6.1 Define and explain the following: i. Inlays (all classes) ii. Crown iii. Premature contact iv. Balancing contact v. Eccentric relationship	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

6.2 List and explain the factors affecting the shaping of inlays and crown in relation to the following: i. Premature contact ii. Balancing contact iii. Eccentric relationship 6.3 Explain the steps taken in shaping 6.4 Shape crown and inlays to eliminate premature and balancing contacts in eccentric relationship						
General Objective: 7.0 Know factors determining selection of alloy types and/or acrylic resin in relation to aesthetics and function						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
5.1 Enumerate factors that determine the selection of alloys and ceramics in the construction of crown and inlays 5.2 Select the appropriate alloys and ceramics for the construction of crowns and inlays and crowns 5.3 Construct inlays and crown using selected alloys and ceramics to	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

reflect function and aesthetics						

PROGRAMME: HND Dental Technology						
COURSE TITLE: Metallurgy in Dental Technology		**Course Code: DTE 313**		**Contact Hours: 2Hrs/Wk (30Hrs/Sem)**		
COURSE SPECIFICATION: Theoretical content			**Practical Content:**			
General Objective: 1.0 Know the range of metals in the periodic table used in dentistry						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
1.1 List all the metals used in dental technology and their melting points and densities 1.2 Describe the extraction from ore, important metals such	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment

as gold, copper, platinum and chromium cobalt 1.3 Define density, specific gravity and melting point 1.4 State the effects of the factors in 1.3 above on metals during manipulation						Examination

General Objective: 2.0 Understand the science of metals and alloys						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
2.1 Define metal and alloy 2.2 Demonstrate the concept of adhesion, cohesion and inter-atomic forces in metallic crystals, changes of stress and strain 2.3 Define and explain primary inter-atomic bonds e.g. primary bonding forces and secondary bonding forces or Van der wal forces	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

General Objective: 3.0 Understand the factors the influence choice of precious metals and other types of metals for dental restoration						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
3.1 Explain chemical and physical reactions of metals used in dental technology e.g. galramic shock	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests

3.2 Define and explain the following: i. Thermal energy ii. Crystal structure 3.3 Describe the crystal structure of alloys of gold, cooper, silver, palladium, platinum, stainless steel and cobalt-chromium 3.4 Demonstrate and explain the following: i. Elasticity ii. Elastic limit iii. Proportional limits iv. Modulus of elasticity v. Resistance vi. Flexibility vii. Impact force viii. Permanent deformation stress 3.5 Define: i. Impact strength ii. Tensile strength iii. Ductility iv. Malleability v. Creep vi. Flow vii. Toughness						Assignment Examination

viii. Brittleness ix. Hardness						
General Objective: 4.0 Understand the technology of heat treatment and other manipulatory treatments of metal for dental purposes						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
1.1 Define and demonstrate heat treatment of metals e.g. annealing, heating soaking, etc. 1.2 Demonstrate and describe Tensile stress and strain, compressive stress and strain, shear stress and strain, and wetting surface energy 1.3 Use graphs to illustrate the following: i. Tensile stress and strain ii. Sheer stress and strain	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

PROGRAMME: HND Dental Technology				
COURSE TITLE: Complete Dental Prosthetics I				
COURSE CODE: DTE 314				
DURATION	**Lecture:- 2 Hrs**	**Tutorial:-**	**Practical:- 2 Hrs**	**Total:- 4Hrs/Wk (60Hrs/Sem)**
CREDIT UNITS: 2 CU				
GOAL: This course is designed to provide the students with the understanding of advanced principles and techniques involved in the production of complete dentures				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				

1.0 Understand the principles of occlusion, retention and stability in the construction of complete denture in classes II and III relationships
2.0 Understand the indications for ant the limitations of immediate denture restorations
3.0 Understand the principles of design and methods of construction for complete dentures
4.0 Understand the clinical factors that determine the choice of immediate restorations and the effect of operative techniques on the design of the final prosthesis

PROGRAMME: HND Dental Technology						
COURSE TITLE: Complete Dental Prosthetics II		**Course Code: DTE 314**		**Contact Hours: 4Hrs/Wk (60Hrs/Sem)**		
COURSE SPECIFICATION: Theoretical content				**Practical Content:**		
General Objective: 1.0 Understand the principles of occlusion, retention and stability in the construction of complete denture in classes II and III relationships						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
1.1 Define and explain the following: i. Occlusion ii. Retention iii. Stability iv. Class II jaw relationship v. Class III jaw relationship vi. Compare dentures 1.2 Explain tooth positions in classes II and III jaw	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

relationships 1.3 Explain associated skeletal structures in classes II and III 1.4 Describe the procedure for positioning teeth in classes II and III occlusal relationship 1.5 Demonstration the principles of articulation and balanced occlusion in both jaw relationships 1.6 Define and explain the following: i. Curve of spee ii. Curve of monsoon iii. Cohesion iv. Adhesion v. Festooning vi. Contouring 1.7 Explain the effect of i-iv above on the function and stability of complete dentures 1.8 Explain the effect of festooning and contouring on aesthetics of complete denture 1.9 Demonstrate the effects of 1.6 above on the construction of complete						

dentures						
General Objective: 2.0 Understand the indications for ant the limitations of immediate denture restorations						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
2.1 Define and explain a complete immediate denture 2.2 State indications and contra-indications for the construction of complete immediate dentures 2.3 State the advantages of complete immediate denture	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination
General Objective: 3.0 Understand the principles of design and methods of construction for complete dentures						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
3.1 Prepare complete denture applying the principles involved 3.2 Identify the various types of complete immediate dentures e.g. socketed and flanged with alveolectomy etc. 3.3 State the role of alveoplastry in complete immediate denture 3.4 Demonstrate the principle	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

and techniques of alveoplastry on a given patient's model 3.5 Construct various types of complete immediate denture						
General Objective: 4.0 Understand the clinical factors that determine the choice of immediate restorations and the effect of operative techniques on the design of the final prosthesis						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
4.1 State the clinical factors or indication that determine the choice of immediate restorations e.g. trauma pathology etc. 4.2 Explain the principles involved in the recording of Axes and gingival margins of teeth for extraction 4.3 Remove standing teeth, leaving the gingival margin marks intact 4.4 Explain reasons for depth variation of the sockets i.e. lebialy and palatally	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

PROGRAMME: HND Dental Technology				
COURSE CODE: DTE 314				
DURATION	**Lecture:- 1 Hr**	**Tutorial:-**	**Practical:- 2 Hrs**	**Total:- 3Hrs/Wk (45Hrs/Sem)**
CREDIT UNITS: 2 CU				
GOAL: This course is designed to enable the students acquire the techniques for the design and construction of full and partial dentures				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				

1.0 Understand the mechanical principles of semi-adjustable articulator, the requirement for facebow and centri/eccentric occlusal records
2.0 Understand the principles and techniques for mounting casts on fully adjustable articulators using facebow recordings
3.0 Know the reasons for the provision of and procedures for constructing duplicate dentures
4.0 Understand the clinical factors which determine the use of resilient liners in complete and partial dentures

PROGRAMME: HND Dental Technology						
COURSE TITLE: Complete Denture Prosthodontics I	**Course Code: DTE 314**		**Contact Hours: 3Hrs/Wk (45Hrs/Sem)**			
COURSE SPECIFICATION: Theoretical content			**Practical Content:**			
General Objective: 1.0 Understand the mechanical principles of semi-adjustable articulator, the requirement for facebow and centri/eccentric occlusal records						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
1.1 Define articulators 1.2 Identify various types of articulators e.g. simple hinge articulator, semi-adjustable articulator and anatomical articulator 1.3 Describe the various components of a semi-adjustable articulators and its functions 1.4 Draw and label a semi-adjustable articulator 1.5 Explain the working principles of a semi-adjustable articulator 1.6 Mount upper and lower cast using a semi-adjustable articulator 1.7 Explain the term facebow	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

and its importance 1.8 Explain the indications for the use of face bow 1.9 State the requirement necessary for the recording of centric and eccentric occlusions						

General Objective: 2.0 Understand the principles and techniques for mounting casts on fully adjustable articulators using facebow recordings						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
2.1 Describe the use of fully adjustable articulator 2.2 Identify the component parts of a fully adjustable articulator and their function 2.3 State the importance of facebow while mounting on fully adjustable articulator 2.4 Construct upper and lower record rims in preparation for clinical recordings 2.5 Mount upper and lower records rims on a full adjustbale articulator taking cognizance of the vertical and	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

horizontal inclinations for the condylar mechanism using facebow						
General Objective: 3.0 Know the reasons for the provision of and procedures for constructing duplicate dentures						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
3.1 Define duplicate dentures 3.2 Enumerate indications for the duplication of dentures 3.3 Explain the advantages and limitations of duplicate dentures 3.4 Identify the materials needed for the reconstruction of a duplicate denture 3.5 Describe the principles and procedures for constructing duplicate dentures 3.6 Reconstruct a given existing complete upper and lower dentures	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination
General Objective: 4.0 Understand the clinical factors which determine the use of resilient liners in complete and partial dentures						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
4.1 Define and give examples of resilient	Lecture Explain the	Textbooks, Charts and Forms, Reading materials.				Quiz

liners 4.2 Enumerate the composition and ideal properties of resilient liners 4.3 State clinical reasons for the use of resilient liners 4.4 Describe the principles of incorporation of resilient liners into an existing denture 4.5 Incorporate resilient liners into existing dentures	concepts covered					Tests Assignment Examination

PROGRAMME: HND Dental Technology				
COURSE TITLE: Functional Anatomy of Mastication, Swallowing and Speech				
COURSE CODE: DTE 316				
DURATION	**Lecture:- 1 Hr**	**Tutorial:-**	**Practical:-**	**Total:- 1Hr/Wk (15Hrs/Sem)**
CREDIT UNITS: 1 CU				
GOAL: This course is designed to enable the students understand the influence of muscles in the design of prosthesis and its retention without impairing speech and mastication				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				
1.0 Understand the role of cheek muscles and the surrounding tissues in the retention of prosthesis in the oral cavity 2.0 Know how speech and mastication can be improved				

PROGRAMME: HND Dental Technology

COURSE TITLE: Functional Anatomy of Mastication, Swallowing and Speech	Course Code: DTE 316	Contact Hours: 1Hr/Wk (15Hrs/Sem)
COURSE SPECIFICATION: Theoretical content		**Practical Content:**

General Objective: 1.0 Understand the role of cheek muscles and the surrounding tissues in the retention of prosthesis in the oral cavity

Specific Learning Objectives:	Teachers Activities	Learning Resources	Specific Learning Objectives:	Teachers Activities	Learning Resources	Evaluation
1.1 Define and explain the following: 1.2 List the muscles of mastication e.g. buccinators, masseter, etc. 1.3 Explain the functions and importance of the muscles listed in 1.2 above prosthesis retention 1.4 List the muscles of facial expression e.g. Modiolus, orbicularis oris etc. 1.5 Explain the functions and importance of muscles listed in 1.4 above in prosthesis retention 1.6 Identify the muscles listed in 1.2 and 1.4 above using models, slides and chart flips	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

General Objective: 2.0 Know how speech and mastication can be improved

Specific Learning Objectives:	Teachers Activities	Learning Resources	Specific Learning	Teachers Activities	Learning Resources	Evaluation

			Objectives:			
2.1 List factors considered in designing and constructing prosthesis which aid speech and mastication 2.2 Explain the effects of the factors in 1.2 above on design and construction of prosthesis	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

PROGRAMME: HND Dental Technology
COURSE TITLE: Principles of Denture Repairs, Relining, Rebasing and Addition

COURSE CODE: DTE 317				
DURATION	**Lecture:- 2 Hrs**	**Tutorial:-**	**Practical:- 2 Hrs**	**Total:- 4Hrs/Wk (60Hrs/Sem)**
CREDIT UNITS: 2 CU				
GOAL: This course is designed to acquaint students with the principles and procedures of denture repair, refining, rebasing and addition of prosthesis				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				
1.0 Understand the definitions and importance of the terms involved in repair, refining, rebasing and addition of prosthesis 2.0 Understand the principles and procedures employed while undertaking repairs, relining, rebasing or additions of prosthesis				

PROGRAMME: HND Dental Technology		
COURSE TITLE: Principles of Denture Repairs, Relining, Rebasing and Addition	**Course Code: DTE 317**	**Contact Hours: 4Hr/Wk (60Hrs/Sem)**

COURSE SPECIFICATION: Theoretical content			Practical Content:			
General Objective: 1.0 Know deciduous and permanent dentation						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
1.1 Define and explain the following: i. Repair ii. Relining iii. Rebasing iv. Addition 1.2 State the reason for each of the procedures in 1.1 above 1.3 List the importance of the procedures in 1.1 above 1.4 State the limitations of the procedures in 1.1 above	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination
General Objective: 2.0 Understand the morphology of the teeth						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
2.1 Explain the principles involved in the following: i. Repairs ii. Relining iii. Rebasing iv. Addition of Prosthesis	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

2.2 Describe the process involved in undertaking the repair of broken dental prosthesis 2.3 Identify the materials required in the repair of broken dental prosthesis 2.4 Repair broken complete upper denture 2.5 Describe the process involved in relining an ill-fitting and sensitive dental alliance 2.6 Describe the constitutions and properties of any chosen tissue soft-liner to be employed in the relining process 2.7 Reline complete lower denture 2.8 Describe the process involved in undertaking rebasing of or loose dental prosthesis 2.9 Rebase complete lower denture 2.10 Describe the process						

involved in the undertaking addition of a missing component of a dental prosthesis 2.11 Carry out the addition for a partial denture with a missing component 2.12 Carry out relining, rebasing, and repair involving impression taking						

Programme: Statistics (National Diploma)	**Course Code: STA 224**	**Total Hours: 5**
Course: Biostatistics I		**Theoretical: 2 hours /week**
Year: 2 Semester: 4	**Pre-requisite:**	**Practical: 3 hours /week**

Goal: This course is designed to enable students apply statistics to biological data and medicine..

General Objectives: On completion of this course, the diplomate will be able to:

1. Understand the importance of statistics in biology and medicine.
2. Understand the concept of vital and health statistics.
3. Understand standardised rates.
4. Understand simple genetics and bioassays**.**

	Theoretical			Practical Content		
	General Objective 1 (STA 224): Understand the importance of statistics in biology and medicine					
Week	**Specific Learning Outcomes**	**Teacher's activities**	**Resources**	**Specific Learning**	**Teacher's**	**Resources**
1	1.1 Explain the scope and uses of statistics in biology and medicine.	Explain and discuss the concepts covered	Textbooks Lecture Notes	Demonstrate understanding of the concepts	Explain and supervise student	Textbooks Lecture Notes
2	1.2 State types and sources of biological and medical data such as states and National Health Services and agricultural returns.	Explain and discuss the concepts covered	Textbooks Lecture Notes	Demonstrate understanding of the concepts	Explain and supervise student	Textbooks Lecture Notes
3	1.3State problems associated with collection of biological and medical statistics.	Explain and discuss the concepts covered	Textbooks Lecture Notes	Demonstrate understanding of the concepts covered by	Explain and supervise student exercises	Textbooks Lecture Notes Secondar

4	1.5 State various types of variability associated with bio-medical data, e.g. response and reactions to drugs	Explain and discuss the concepts covered	Textbooks Lecture Notes Secondar	Demonstrate understanding of the concepts covered by	Explain and supervise student exercises	Textbooks Lecture Notes Secondar
	General Objective 2 (STA 224): Understand the concepts of vital and health statistics					
5	2.1 Classify vital and health statistics.	Explain and discuss the concepts covered	Textbooks Lecture Notes Secondar	Demonstrate understanding of the concepts covered by	Explain and supervise student exercises	Textbooks Lecture Notes Secondar

6	2.2 Define basic vital statistical indices.	Explain and discuss the concepts covered	Textbooks Lecture Notes Secondary data from	Demonstrate understanding of the concepts covered by solving examples	Explain and supervise student exercises and assess	Textbooks Lecture Notes Secondary data from

7	2.3 Enumerate the uses of the indices in 2.2 above	Explain and discuss the concepts covered	Textbooks Lecture Notes Secondar	Demonstrate understanding of the concepts covered by	Explain and supervise student exercises	Textbooks Lecture Notes Secondar
	General Objective 3 (STA 224): Understand standardized rates					
8	3.1 Define standardized rates. .	Explain and discuss the concepts covered	Textbooks Lecture Notes Secondar	Demonstrate understanding of the concepts covered by	Explain and supervise student exercises	Textbooks Lecture Notes Secondar

9	3.2 Distinguish between direct and indirect methods of standardization of rates.	Explain and discuss the concepts covered	Textbooks Lecture Notes Secondary data from	Demonstrate understanding of the concepts covered by solving examples	Explain and supervise student exercises and assess	Textbooks Lecture Notes Secondary data from

10	3.3 Illustrate methods in 3.2 above with examples	Explain and discuss the concepts covered	Textbooks Lecture Notes Secondar	Demonstrate understanding of the concepts covered by	Explain and supervise student exercises	Textbooks Lecture Notes Secondar
11	3.3 (cont.) Illustrate methods in 3.2 above with examples	Explain and discuss the concepts covered	Textbooks Lecture Notes Secondar	Demonstrate understanding of the concepts covered by	Explain and supervise student exercises	Textbooks Lecture Notes Secondar
	General Objective 4 (STA 224): Understand simple genetics and bioassays					

1 2	4.1 Explain the meaning of genetics. .	Explain and discuss the concepts covered	Textbooks Lecture Notes Secondary data from	Demonstrate understanding of the concepts covered by solving examples	Explain and supervise student exercises and assess	Textbooks Lecture Notes Secondary data from

13	4.2 Define simple Mendelian ratio.	Explain and discuss the concepts covered	Textbooks Lecture Notes Secondar	Demonstrate understanding of the concepts covered by	Explain and supervise student exercises	Textbooks Lecture Notes Secondar
14	4.3Explain the fundamental principles of bioassay. 4.4State the concepts of ED 50 and LD	Explain and discuss the concepts covered	Textbooks Lecture Notes Secondar	Demonstrate understanding of the concepts covered by	Explain and supervise student exercises	Textbooks Lecture Notes Secondar
15	4.5Explain relative potency. 4.6Describe simple assays: direct and parallel lines	Explain and discuss the concepts covered	Textbooks Lecture Notes Secondar	Demonstrate understanding of the concepts covered by	Explain and supervise student exercises	Textbooks Lecture Notes Secondary data from

PROGRAMME: HND DENTAL TECHNOLOGY				
COURSE TITLE: PHARMACOLOGY II				
COURSE CODE: DTS 301				
DURATION: (Hours/Week):	**Lecture: 2**	**Tutorial:**	**Practical: 0**	**Total Contact Hours: 2 (30 hrs.)**
CREDIT UNITS: 2 CU.				
GOAL: This course is designed to provide the students with the knowledge of drugs used in the management of patient with various diseases				
GENERAL OBJECTIVES: At the end of the course, the student should be able to:				
1.0 Understand the concept of National Drug Policy in the context of National Health Policy.				
2.0 Understand the Nigerian National Formulary, concept of Essential Drugs and Drug Revolving Funds.				
3.0. Understand the importance of patient education and counseling on the use of drugs				
4.0 Know types of drugs for treating conditions of various systems				
5.0 Know the drugs used in other health conditions.				

PROGRAMME: HND DENTAL TECHNOLOGY						
COURSE TITLE: PHARMACOLOGY II		**Course Code: DTS 301**		**Total Contact Hours: 30 hours**		
COURSE SPECIFICATION: Theory						
GENERAL OBJECTIVE 1.0: Understand the concept of National Drug Policy in the context of National Health Policy						
Specific Learning Objectives (Theory)	**Teacher's Activities**	**Resources**	**Specific Learning Objectives (Practical)**	**Teacher's Activities**	**Resources**	**Evaluation**
1.1 Explain the National Drug Policy in the context of National Health Policy. 1.2 Describe the concept of Essential Drugs: historical background, advantages and limitations. 1.3 Explain the roles of the nurse in the implementation of essential drug programme.	• Lecture • Discussion • Brainstorming	• Sample of National Health Policy (NHP) &National Drug Policy (NDP) documents • Sample of Essential Drugs list • Drug prescription papers • Multimedia, projectors/laptop • Slides/CDs				• Assignment • Test • Questionnaire • Quiz • Examination

1.4 Explain the implication of: • drug over prescription • under prescription and • multiple prescriptions						
General Objective 2.0: Understand the Nigeria National Formulary, Concept of Essential drug and Drug Revolving Fund Programme (DRF)						
Specific Learning Objectives (Theory)	**Teacher's Activities**	**Resources**	**Specific Learning Objectives (Practical)**	**Teacher's Activities**	**Resources**	**Evaluation**
2.1 Explain the role of: national formulary in rational prescription, criteria for the selection of National Essential Drug list. 2.2 Explain the concept of Drug	• Lecture • Discussion • Trip to Pharmacy /Medical store.	• Samples of drugs • Sample of drug revolving fund documentation paper				• Assignment • Test • Questionnaire • Quiz • Examination

Revolving Fund (DRF).						
2.3 Identify the sources of Drug Revolving Fund (DRF).						
2.4 Explain the objective, social consequences of costing, pricing and exemptions under the Drug Revolving Fund (DRF).						
2.5 Explain the financial control of Drug Revolving Fund programme to ensure success.						
2.6 Explain the roles of the nurse in						

Drug Revolving Fund scheme management.						
General Objective 3.0: Understand the importance of patient education and counseling on the use of drugs						
Specific Learning Objectives (Theory)	**Teacher's Activities**	**Resources**	**Specific Learning Objectives (Practical)**	**Teacher's Activities**	**Resources**	**Evaluation**
3.1 Explain the concept of Pharmacovigilance 3.2 Define self-medication. 3.3 Explain self - medication, compliance and non-compliance and associated dangers. 3.4 Explain the importance of patient education and counseling on the use of drugs.	• Lecture • Discussion • Brain storming • Counseling	• samples of drugs • Adverse drug reaction charts				Assignment Test Questionnaire Quiz Examination
General Objective 4.0: Know the types of drugs for treating conditions of various systems						
Specific Learning Objectives (Theory)	**Teacher's Activities**	**Resources**	**Specific Learning Objectives (Practical)**	**Teacher's Activities**	**Resources**	**Evaluation**

4.1 Identify various types of drugs for treating conditions of various systems e.g. Cardio Vascular, Central Nervous, Gastro Intestinal Tract, Respiratory, Musculo Skeletal, Reproductive and Endocrine System, Special Senses. 4.2 Describe the dosage, action and contraindications of the drugs used in 4.1 above. 4.3 Identify the signs and symptoms of side effects of the drugs. 4.4 Classify drugs according to their action e.g. antibacterial, antiseptic, antiprotozoal, antifungal etc.	• Lecture • Discussion • Demonstration of serving of drugs • Return demonstration	• Models • Charts • Textbooks • White board • Markers • Samples of drugs				• Assignment • Test • Questionnaire • Quiz • Examination

4.5 Prescribe and administer routine drugs.						

General Objective 5.0: Know the drugs used in management of other health conditions.						
Specific Learning Objectives (Theory)	**Teacher's Activities**	**Resources**	**Specific Learning Objectives (Practical)**	**Teacher's Activities**	**Resources**	**Evaluation**
5.1 Identify drugs such as: anti-parasitic, antibacterial, antifungal,cytotoxic, anti-histamines, psychogenic, vitamins, and minerals etc. 5.2 Describe each drug group listed in 5.1 above 5.3 Identify types and compositions of infusions	• Lecture • Discussion • Guide students to identify types and compositions infusions • Demonstrate setting of intravenous line	• Drug samples • Laboratory • Textbooks • Audio-visual aids • Sample of drips(infusions) • Drip stand, screen • Drip setting tray				• Assignment • Test • Questionnaire • Quiz • Examination

PROGRAMME: HND Dental Technology				
COURSE TITLE: Polymer Chemistry				
COURSE CODE: PLT 211				
DURATION	**Lecture:- 1 Hr**	**Tutorial:-**	**Practical:- 2 Hrs**	**Total:- 3Hrs/Wk (45Hrs/Sem)**
CREDIT UNITS: 2 CU				
GOAL: This course is designed to provide the students with the basic knowledge of Chemistry of Polymers				

GENERAL OBJECTIVES: On completion of the course, the student should be able to:

1.0 Understand the basic principles of polymer science
2.0 Understand the Chemistry of Polymer Synthesis
3.0 Understand the technique for the commercial production of polymers

PROGRAMME: HND Dental Technology						
COURSE TITLE: Polymer Chemistry		**Course Code: PLT 211**		**Contact Hours: 3Hrs/Wk (45Hrs/Sem)**		
COURSE SPECIFICATION: Theoretical content			**Practical Content:**			
General Objective: 1.0 Understand the basic principles of polymer science						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
1.1 Define Polymers 1.2 Classify Polymers 1.3 List the general properties of Polymers 1.4 Describe the physical and molecular structure of polymers	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

1.5 Carryout the following simple test to identify a polymer 1.6 Explain average molar mass and molar mass distribution 1.7 Determine average molar mass of polymer by the following methods: viscometer, osmometer, boiling point elevation and end group analysis 1.8 Explain the importance of molar mass distribution in selecting a polymer material for a particular application 1.9 Explain the terms: Glass transit/Temperature (Tg) and melting temperature 1.10 List the factors affecting Tg and Tm 1.11 Measure the Tg of Polymers by volume expansion coefficient						

General Objective: 2.0 Understand the Chemistry of Polymer Synthesis						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
2.1 Define polymerization, functionality and degree of polymerization 2.2 Classify polymerization process 2.3 Outline the mechanism of chain polymerization (free radical) 2.4 Outline the mechanism of	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

step-growth polymerization 2.5 Compare chain polymerization and step-growth polymerization 2.6 Define copolymerization 2.7 Classify copolymers into: Black, random, and graft copolymers						
General Objective: 3.0 Understand the technique for the commercial production of polymers						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
3.1 Identify and describe the different techniques of producing polymers commercially 3.2 Outline the process of bulk polymerization 3.3 List the advantages and disadvantage of bulk polymerization 3.4 Outline the process of suspension polymerization 3.5 List the advantages and disadvantages of suspension polymerization 3.6 Outline the process of solution polymerization 3.7 List the advantages and disadvantages of solution polymerization 3.8 Outline the process of emulsion polymerization 3.9 List the advantages and	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

disadvantages of emulsion polymerization 3.10 Prepare different polymers using the techniques listed in 3.1 above						

PROGRAMME: HND Dental Technology				
COURSE TITLE: Primary Oral Health Care				
COURSE CODE: DTH 313				
DURATION	**Lecture:- 1 Hr**	**Tutorial:-**	**Practical:- 1 Hr**	**Total:- 2Hrs/Wk (30Hrs/Sem)**
CREDIT UNITS: 2 CU				
GOAL: This course is designed to provide the students with the knowledge of the common oral diseases and their management in accordance with the Primary Oral Health				

Care standing orders
GENERAL OBJECTIVES: On completion of the course, the student should be able to:
1.0 Know healthy oral tissues, diagnosis and aetiology of common oral diseases 2.0 Know the general preventive and control measures of common dental diseases 3.0 Know the epidemiology of dental diseases in a community

PROGRAMME: HND Dental Technology						
COURSE TITLE: Primary Oral Health Care		**Course Code: DTH 313**		**Contact Hours: 2Hrs/Wk (30Hrs/Sem)**		
COURSE SPECIFICATION: Theoretical content			**Practical Content:**			
General Objective: 1.0 Know healthy oral tissues, diagnosis and aetiology of common oral diseases						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
1.1 Define oral health 1.2 Describe the anatomy of the mouth in relation to teeth and gingivae 1.3 Explain the aetiology of periodontal diseases and	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

dental caries 1.4 Identify the features of inflamed gingivae 1.5 Describe the composition of dental plague and calculus 1.6 Identify dental plague, calculus and caries in the oral cavity 1.7 Examine school children, personnel and other members of a community for oral diseases 1.8 Identify and diagnose common oral diseases as stated in the primary oral health care standing orders 1.9 Treat oral health problem identified in 1.8 above 1.10 Refer patients to the next management level for further management if necessary						

General Objective: 2.0 Know the general preventive and control measures of common dental diseases						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
2.1 Enumerate the various preventive and control measures of common dental diseases 2.2 Explain the preventive and control measures in 2.1 above 2.3 Design an oral health education programme for the prevention and control of oral	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

dental diseases in a community						
General Objective: 3.0 Know the epidemiology of dental diseases in a community						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
3.1 Define epidemiology 3.2 Define the common terminologies used in epidemiology e.g. incidence, prevalence, endemic, epidemic, pandemic, etc. 3.3 Explain the epidemiological factors responsible for the prevention of: 3.4 Gather epidemiological data from a community 3.5 Diagnose and treat identified dental diseases in 3.3 above in a rural community 3.6 Design an oral education programme for the prevention of the disease in 3.4 above in a rural community	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

	Department/ Programme: National	**Course Code:**		**Credit Hours: 4**

	Diploma			
	Subject/Course: **Introductory**Microbiology	DDS 111		**Theoretical: 1 hours/week**
	Year:Semester:	**Pre-requisite:**		**Practical: 3 hours /week**

General Objectives

1.Understand the history and scope of microbiology

2. Know the microscope examination of micro-organisms

1. Understand systematic microbiology

2. Understand growth of micro-organisms

3. Know the isolation, cultivation and preservation of different micro-organisms

4. Know the various methods of control of micro-organisms

	National Diploma	**Course Code: DDS 111**		**Credit Hours: 4**		
	Microbiology			**Theoretical: 1 hours/week**		
	Year:Semester:	**Pre-requisite:**		**Practical: 3 hours /week**		
	Theoretical Content			**Practical Content**		
	General Objective 1.0: Understand the History and Scope of Microbiology.					
Week /s	**Specific Learning Outcomes**	**Teacher's activities**	**Resources**	**Specific Learning Outcomes**	**Teacher's activities**	**Resources**
1 2	1.1 Outline the scope of microbiology 1.2 List the early scientists involved in the development of the microscope and microbiology.	Refer students to relevant texts and asses their work up. Give assignment.	Classroom and library	Examine a drop of pond water under the light and compound microscope and identify micro-organisms	Assist students to make:- smears hanging drops, whole mounts, staining etc	Microscopes: Light and compound Microscopes

	1.3 Describe the role of the scientists in 1.2 above. 1.4 Explain the role of microbiology in medicine, agricultural, industry etc.			Continue with the experiment above		
	General Objective 2.0: Know the microscope examination of micro-organisms.					
3 4	2.1 Explain the principle of microscopy. 2.2 Identify and describe all types of microscope e.g. light microscope, compound microscope, dark field, microscope, phase contrast microscope, electro-microscope. 2.3 Explain the application of each type of microscope in 2.2 above in the study of microbiology. 2.4 List and describe the various microbial staining techniques e.g., spore	Lecture Give assignment		Identify and distinguish micro-organism By using staining techniques Differentiate between Prokaryotes and Eukaryotes.	Assist students to make:- whole mounts, staining etc Illustrate the various diagnostic method to identify the	Microscopes: Microscopes Chemicals and stains microscopic slides, culture loops and laboratories reagents

	stain, flagella stain				micro-organisms	

	General Objective 3.0: Understand Systematic Microbiology.					
5 6	3.1 Describe the characteristics of micro-organisms 3.2 Describe the morphological characteristics of the following groups of micro-organism: Virus, Bacteria, Rikettsiases, Mycoplasma, Protozoa, Funji-Algae 3.3 List and explain the morphological and biochemical basis for classifying micro- organisms e.g. (a) Morphological shape, possession of flagella, capsule, vacuoles, chloroplasts etc. (b) Biochemical-classify the different groups of microorganisms applying	lecture		serological tests, oxidase test, catalase test etc. Cultivation and observation and measurement of growth of micro-organisms (e.g. Rhizopod, penicillium,	Supervise students	Culture medium And materials, ovens, microscopes, stains etc

	3.4 above			e.coli, etc)		
	General Objective 4.0: Understand the growth of micro-organisms.					
7 8	**Growth of Micro-organism** 4.1 Explain the nutritional requirements of micro-organisms 4.2 Explain the sources of nutrient for various groups of micro-organisms. 4.3 Explain the break down and use of food molecules by micro-organisms. 4.4 Describe the microbial growth curve.	lecture	Classroom resources	Prepare, sterilise and preserve microbial growth cultures. Pour and preserve growth on petri dishes and on agar slants.		Autoclave Refrigerators Raw source of carbohyd rate

	General Objective 5.0: Know the isolation, cultivation and preservation of different micro-organisms					
9-11	List the main types of culture media used for different groups of micro-organisms. Describe the composition of each of the media in 5.1 above. List other materials that can be added to	lecture	Classroom resources	Prepare pure culture from a mixed culture.	Involve students in the preparation of culture media and sub-culturing of micro-	Amino Acid vitamins etc. Autoclave Incubators Anaerobic jars

	microbial growth media to enhance microbial growth. Describe various culture characteristic on agar Describe the terms pure culture and mixed culture. Describe methods of maintaining pure cultures in the laboratory.			Inoculate bacteria aerobically and anaerobically using incubator and jars.	organism.	
	General Objective 6.0: Know the various methods of control of Micro-organisms.					
12-14	List the reasons why micro-organisms should be controlled.	Lecture Assignments	Blackboard Chalk Charts	Application of Softy precautions involved in	Conduct practicals to know the	Autoclave Petri dishes Culture

				Microbiological	mode	apparatus
	Explain the terms sterilisation; disinfecting.		Monographs	works	of actions of	Microscopes
			Dusters		inhibitors.	stains
	Describe various methods of (a) physical					
	disinfecting and sterilisation (b) chemical					
	disinfecting and sterilisation.			Sterilise various		
				laboratory objects		
	List and describe modes of action of various			using the autoclave.		
	chemical anti-microbial agents.				Demonstration	
				Grow micro-	of aseptic	
	Explain the term inhibiting agents			organisms	techniques.	
				(e.g.mucor,		
				aspergillas) under		
15	Describe the procedure for transporting			aseptic conditions		
	culture samples from one laboratory to the					
	other.					

PROGRAMME: HND Dental Technology				
COURSE TITLE: Partial Dental Prosthetics				
COURSE CODE: DTE 321				
DURATION	**Lecture:- 1 Hr**	**Tutorial:-**	**Practical:- 3 Hrs**	**Total:- 4Hrs/Wk (60Hrs/Sem)**
CREDIT UNITS: 2 CU				
GOAL: This course is designed to acquaint students with the knowledge of tooth-borne partial denture design, construction and applications				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				

1.0 Understand the principles of tooth-borne partial denture design and construction
2.0 Understand the principles of "lost wax" process in metal casting and its dental applications
3.0 Understand the principles of dental application of metal melting and finishing systems
4.0 Understand the principles and process of soldering dental alloys

PROGRAMME: HND Dental Technology		
COURSE TITLE: Partial Dental Prosthetics	**Course Code: DTE 321**	**Contact Hours: 4Hrs/Wk (60Hrs/Sem)**
COURSE SPECIFICATION: Theoretical content		**Practical Content:**

General Objective: 1.0 Understand the principles of tooth-borne partial denture design and construction						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
1.1 Define and explain tooth-borne partial dentures 1.2 Explain the importance and function of tooth-borne partial dentures 1.3 List the various classes of tooth-borne partial dentures e.g. Kennedy and Beckett's classifications 1.4 Describe the component parts of tooth-borne partial dentures and their functions 1.5 Explain the advantages and limitation of tooth-borne partial denture 1.6 Describe the principles of tooth-borne partial denture 1.7 Describe the constituents and properties of the materials of the component parts of tooth-borne partial dentures 1.8 Demonstrate the designs of tooth-borne partial dentures on given models using the principles described in 1.6 above (Demonstration should cover various classes) 1.9 Describe the process of the construction of various classes of tooth-borne partial dentures	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

.10 Construct various classes of tooth-borne partial						
General Objective: 2.0 Understand the principles of "lost wax" process in metal casting and its dental applications						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
2.1 Define the term "Lost Wax" process 2.2 Explain the importance of "Lost Wax" process in metal casting 2.3 List the various types of waxes used in metal casting process 2.4 Describe the composition and properties of the metal casting process 2.5 List the various types of investment materials used in metal casting process 2.6 Describe the composition and properties of investment materials used in metal casting process 2.7 Describe the principles of "Lost Wax" process in metal casting 2.8 Prepare WAC pattern of	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

tooth-borne partial dentures 2.9 Prepare molds of WAX pattern of tooth-borne partial dentures in preparation for metal casting 2.10 Cast metal for tooth-borne partial dentures						
General Objective: 3.0 Understand the principles of dental application of metal melting and finishing systems						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
3.1 Define or explain the following terms: i. Wax Pattern ii. Investing iii. Sprucing iv. Burnout Temperature v. Burnout Time vi. Wax-pattern coating vii. Metal melting viii. Casting ix. Finishing in relation to metal works 3.2 Describe the principles of metal melting in relation to dental technology practice 3.3 Melt metal for the production of partial dental skeletal plate	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

3.4 Carry out the finishing process of the produced partial denture skeletal plate in 3.3 above.						
General Objective: 4.0 Understand the principles and process of soldering dental alloys						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
4.1 Define and explain the following terms: 4.2 Describe the mechanism of "joining" in soldering 4.3 List the types, composition and properties of fluxes 4.4 Describe various methods of soldering 4.5 Describe various methods of heating 4.7 List the types, composition and properties of solders 4.8 Identify the major hand tools and equipment used in soldering 4.9 Describe the functions of the various parts of the	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

equipment in 4.8 above 4.10 Solder dental alloys						

PROGRAMME: HND Dental Technology				
COURSE TITLE: Orthodontic Technology I				
COURSE CODE: DTE 322				
DURATION	**Lecture:- 1 Hr**	**Tutorial:-**	**Practical:- 3 Hrs**	**Total:- 4Hrs/Wk (60Hrs/Sem)**
CREDIT UNITS: 2 CU				
GOAL: This course is designed to provide students with basic knowledge of orthodontics				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				
1.0 Understand the history and essentials of orthodontics				

2.0	Know the musculature, anatomical features and bone growth regions associated with myofunctional appliance therapy
3.0	Know the principles of screw, spring and myofunctional appliances
4.0	Understand the selection or removable orthodontic appliances and types of anchorage used in orthodontics

PROGRAMME: HND Dental Technology						
COURSE TITLE: Orthodontic Technology I		**Course Code: DTE 322**		**Contact Hours: 4Hrs/Wk (60Hrs/Sem)**		
COURSE SPECIFICATION: Theoretical content				**Practical Content:**		
General Objective: 1.0 Understand the history and essentials of orthodontics						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
1.1 Define Orthodontics 1.2 Narrate the relevance of orthodontic treatment in contemporary dental practice 1.3 Outline the history of Orthodontics 1.4 List the goals of Orthodontic treatment 1.5 Classify Orthodontic appliances	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

1.6 Define normal occlusion 1.7 Define mal-occlusion 1.8 Classify mal-occlusion 1.9 Produce Orthodontic models to reflect various classes of mal-occlusion .10 Define pressure in relation to Orthodontics .11 Explain the effects of pressure from Orthodontics appliances e.g. Orthodontics appliance .12 Describe the aetiology of bones in relation to oral appliances e.g. Orthodontics appliances .13 Define Orthodontic model .14 State the significance of models in Orthodontic treatment .15 Describe Orthodontics model making in its trimming .16 Produce and trim Orthodontics models						
General Objective: 2.0 Know the musculature, anatomical features and bone growth regions associated with myofunctional appliance therapy						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
2.1 Define myofunctional appliances 2.2 List myofunctional appliance and their uses 2.3 List the muscles of mastication 2.4 List the muscles of facial expression	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

2.5 Identify the muscles of mastication and facial expressions in relation to myofunctional appliances 2.6 Describe the aetiology of bone growth in relation to myofunctional appliances in the following areas: i. The maxilla (palate) ii. The mandibles 2.7 Describe the principles and procedures for the construction of myofunctional appliances 2.8 Construct myofunctional appliances						
General Objective: 3.0 Know the principles of screw, spring and myofunctional appliances						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
3.1 Define screw and spring in relationship to orthodontic appliances 3.2 List various types of screws 3.3 List the various types of springs 3.4 Identify various screws and spring in orthodontic treatment 3.5 Explain reason why expansion screws are used in orthodontic treatment 3.6 Identify various	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

expansion screw appliances 3.7 Identify various spring incorporated appliances in the treatment of orthodontic patients 3.8 Compare and contrast the effects of screw and spring appliances in orthodontics 3.9 Describe the principles and procedures of constructing spring and screw appliances 3.10 Construct various types of screw expansion appliances 3.11 Construct removable spring appliance						
General Objective: 4.0 Understand the selection or removable orthodontic appliances and types of anchorage used in orthodontics						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
4.1 Define anchorage in relation to orthodontics 4.2 Identify various types of anchorage e.g. simples, reciprocal, re-enforced, intermaxillary, etc 4.3 Explain the effects of anchorage on orthodontic appliances 4.4 Describe the principles of anchorage in the construction of orthodontic appliances	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

4.5 Demonstrate anchorage 4.6 Construct five different appliances exhibiting anchorage 4.7 List the requirement for anchorage 4.8 Examine various orthodontics models to determine treatment 4.9 Select models to determine orthodontic treatment						

Programme: SCIENCE LABORATORY TECHNOLOGY: MICROBIOLOGY			
Course: BACTERIOLOGY		**Course Code: STM 311**	**Contact Hours: 2 – 0 - 3**
Week	**General Objectives: 1.0 Understand bacterial structure**		
	Special Learning Objective	**Teachers Activities**	**Resources**

	ANATOMY AND MORPHOLOGY OF BACTERIA • Describe with examples the principal gross forms of eubacteria as revealed by light microscopy e.g. cocci, bacilli, cocco- bacilli etc. • Describe the chemical composition of the bacterial cell wall. • Describe bacterial cytoplasmic ultrastructures. • Explain the form and structures of bacterial flagella, pilli and	Lecture Give assignment Question and answer technique 2 do – 3 do –	Microscopes Slides Incubators

Week	General Objectives: 2.0 Know the principles of bacterial nomenclature and taxonomy		
	Special Learning Objective	**Teachers Activities**	**Resources**
	CLASSFICATION OF BACTERIA • Explain bacterial class, order, family, genius, species and strain. • Explain the anatomical and physiological properties used as criteria in the development of the determinative key in bacteriology. • Draw a chart of bacterial taxonomy based on 2.2 above.	Lectures Assignments Questions and answer techniques 3 do – 4 do –	Blackboard Projectors Taxonomic charts

Week	General Objectives: 3.0 Know the methods of identification of bacteria		
	Special Learning Objective	**Teachers Activities**	**Resources**
5 - 6	IDENTIFICATION OF BACTERIA • Explain the following staining terminologies: mordant, accentuators, vital staining. • Differentiate between acid, basic and neutral staining. • Explain the formulation of stains important in the identification of bacteria. • Explain the principles of the reactions of the stains in 3.3 above.	Lectures Practical Assignment Questions and answer techniques Grade log books (practical notebooks) Students to prepare different reagents used for 3.1	Microscope Glass ware Slides Incubators Weighing balances Water baths Hot plates Magnetic stirrers

Week	General Objectives: 4.0 Understand the principles and methods of cultivation an maintenance of bacterial cultures		
	Special Learning Objective	**Teachers Activities**	**Resources**

7 - 9	BACTERIA CULTURES AND GROWTH CHARACTERISTICS 4.2 Explain factors which influence bacterial growth under laboratory conditions e.g. pH, temperature, moisture, nutrient requirements etc. 4.3 Draw and explain the bacterial growth curve. 4.4 Explain types of culture media, e.g. enriched media, differential media etc. 4.5 Identify examples of various bacteriological media in 4.3 above. 4.6 Explain the preparation and storage of various bacteriological media. 4.7 Inoculate bacteria on media in plate, tube and bottle	Lectures Give assignment Question and answer techniques Laboratory demonstration activities Carry out the inoculation of different bacterial media in tube plates and bottle.	Glass ware Autoclave Hot air oven Water bath pH meter Thermometer s Refrigerator Inoculating loops Anaerobic jar U-V lamps

Week	General Objectives:		
	Special Learning Objective	**Teachers Activities**	**Resources**
	• Describe medium preparation and the cultivation of micro aerophilic bacteria e.g **Neissaria spp.** • Prepare media for special purposes e.g. transport media, media for growth of spirochaetes, leptospira and mycoplasma. • Describe the various methods for the separation of mixed cultures.	Prepare media for special purposes. Carry out isolation of **Neisseria spp.** Prepare and store stock culture	

Week	General Objectives: 5.0 Know major bacterial taxonomic groups		
	Special Learning Objective	Teachers Activities	Resources

10-12	TAXONOMIC GROUPS OF BACTERIA 5.2 Identify the bacterial taxonomic orders. 5.3 List families and Genera of the orders. 5.4 Explain the morphological, cultural, biochemical and antigenic properties as well as economic importance of the following groups of bacteria: II. Gram negative aerobic rods and colic-pseudomonadaceae, acetobacteriaceae, rhizobiaceae, brucellaceae. III. Gram negative; facultatively anaerobic rods, enterobacteriaceae, vibrionaceae. IV. Gram negative, anaerobic rods- bacteriodaceae. V. Gram negative heterotrophic aerobic cocci and coccibacilli, Neisseriaceae. VI. Gram negative, heterotrophic anaerobic cocci-Veillonellacea. VII. Gram negative, chemolithotrophic rods and cocci-	Lectures Assignments Questions and answer technique 5 do – 6 do – 7 do –	Taxonomic charts, tables.

	6 Spirochaetes. 7 Genera of uncertain affiliation (differentiate as far as possible)		Autoclave Incubators Microscopes Glass ware

Week	General Objectives: 6.0 Know the principles and methods of controlling bacterial number in the environment.		
	Special Learning Objective	**Teachers Activities**	**Resources**
13-14	6.5 Explain sterilization and disinfection by physical methods. 6.6 Explain sterilization and disinfections by chemical methods.	Lectures Questions and answer technique Laboratory Practical sterilization and disinfection	Autoclave Refrigerators Bunsen burner Hot air Glass ware Inoculating loops Knives, scalpels
Week	**Special Learning Objective**	**Teachers Activities**	**Resources**

1-2 5-6 7-9	II. Prepare slides and observe and draw various bacteria forms under the microscope. III. Carry out the biochemical tests in 3.5 above e.g. sugar fermentation reactions, methy1 red, MRUP etc. IV. Inoculate bacteria on media in plate, tube and bottle. V. Prepare various media for isolation and identification of specific bacteria e.g. mannitol salt agar for **staphylococcus<u>aureus</u>** etc. VI. Isolate and identify the organism in 4.6 above. VII. Cultivate anaerobic bacteria using anaerobic jar. 7 Prepare media for special purposes e.g. transport media, media for growth of spirochaetes, leptospira and mycoplasma	7 Supervise students prepare stain view and draw. 8 Supervise students to carry out biochemical identification of different Gram positive and Gram-negative bacteria e.g. sugar fermentation methyl red, MRUP etc. Carry out the inoculation of different bacterial media in tube plates and bottle. Prepare different microbiological media for different uses. Isolate common bacteria. Carry tests to identify common bacteria. Carry out cultivation of anaerobic bacteria.	7 Slides of bacteria culture. 8 Microscope Glass ware Slides Incubators Weighing balances Water baths Hot plates Magnetic stirrers 9 Glass ware Autoclave Hot air oven Water bath pH meter Thermometers Refrigerator Inoculating loops Anaerobic jar U-V lamps

PROGRAMME: HND DENTAL TECHNOLOGY				
COURSE TITLE: OCCLUSSION AND ITS DYSFUNCTION				
COURSE CODE: DTE 323 (Merged with 411)				
DURATION	**Lecture:- 2 hrs**	**Tutorial:-** hrs	**Practical:-** hours	**Total:- 30 hrs**
CREDIT UNITS: 2				
GOAL: This course is designed to acquaint the student with knowledge of the intricacies of balanced occlusion and its effects on the efficiency of dental prostheses and health of the patient.				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				
1.0 Know the terms used in describing occlusal relationships 2.0 Understand the processes of obtaining balanced occlusion from completed dental prostheses 3.0 Know factors governing establishment of balanced occlusion 4.0 Know the effects of occlusal irregularities on the health of the patient				

PROGRAMME:HND DENTAL TECHNOLOGY		
COURSE TITLE: DTE 323	**Course Code: DTE 323**	**Contact Hours:hrs**

COURSE SPECIFICATION: Theoretical content			Practical Content:			
General Objective 1.0: Know the terms used in describing occlusal relationships						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Occlusal relationship 1.1 Explain the meaning of the following terms: i. Centric occlusion ii. Balanced occlusion iii. Freeway space (FWS) iv. Rest vertical dimension (RVD) v. Rest Position (RP) vi. Intercuspal position (IP) vii. Occlusal vertical dimension (OVD) viii. Occlusal vertical dimension 1.2 Describe the relationship between the terms in 1.1. above 1.3 Explain with the aid of articulated full/full dentures the						

phenomena in 1.1 above						
General Objective 2.0: Understand the processes of obtaining balanced occlusion from completed dental prostheses						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Balanced occlusion 2.1 Identify areas of irregularities on the occlusal surfaces of dentures 2.2 Ascertain intensity of pre-mature contact with the use of articulation papers 2.3 Explain spot-grinding process to obtain balanced occlusion 2.4 Explain the relationship between the condylar angle and balanced occlusion						
General Objective 3.0: Know factors governing establishment of balanced occlusion						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Establishment of balanced occlusion						

3.1 Explain the following factors that affect balanced occlusion i. Condylar guidance ii. Incibal guidance iii. Occlusion plane or plane orientation iv. Compensation curves v. Cuspal heights 3.2 Describe the appropriate values of factors listed in 3.1 above 3.3 Explain how the ideal values of factors in 3.2 above can be obtain						
General Objective 4.0: Know the effects of occlusal irregularities on the health of the patient						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Effect of occlusal on pattent's health 4.1 Explain the pxy hology of dental prostheses in relation to: i. Confidence of the wearer in solid settings						

ii. Improvement in facial profile 4.2 Explain the following health problems associated with dental prostheses i. Angular chelities ii. Denture-induced stomatitis iii. Denture-induced granuloms iv. Temporamandibular joints (TMT) disorders 4.3 Explain modifications to be carried out on dental prostheses to prevent and cure the health problems listed in 4.2 above						

PROGRAMME: HND DENTAL TECHNOLOGY				
COURSE TITLE: COMPLETE DENTURE PROSTHETICS III				
COURSE CODE: DTE 411 (merge with 317) Relining, repairs etc				
DURATION	**Lecture:- 2 hrs**	**Tutorial:-** Hours	**Practical:- 3** hours	**Total:- 75 hrs**
CREDIT UNITS: 3				
GOAL: This course is designed to give the student a broad knowledge of finishing processes in construction and duplication of complete dentures				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				
1.0 Understand the principles of occlusion, retention and stability in the construction of complete denture in classes II and III relationships 1.0 Know how to deflask the denture from the mould 2.0 Understand the trimming of cleaned denture to anatomical outlines 3.0 Know how to festoon and stipple appropriate areas of the denture and place back on the articulator 4.0 Understand the polishing of dentures using polishing materials 5.0 Understand the use of squash bits or articulation paper marks for spot grinding				

PROGRAMME:HND DENTAL TECHNOLOGY		
COURSE TITLE: COMPLETE DENTURE PROSTHETICS III	**Course Code: DTE 411**	**Contact Hours: 75 hrs**

COURSE SPECIFICATION: Theoretical content				Practical Content: 3 hrs		
General Objective 1.0: Know how to deflask the denture from the mould						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Deflasking of denture 1.1 Explain the stages of flask separation by the use of rubber mallet and plaster knife 1.2 Remove denture from model using turbine chisel, plaster shears and saw 1.3 Immerse deflasked dentures in ultrasonic cleaners to remove plaster particles from the fitting surface						
General Objective 2.0: Understand the trimming of cleaned denture to anatomical outlines						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Cleaned Denture 2.1 Identify muscle attachment on the dentures 2.2 Explain the purposes of relief of muscled attachment						

2.3 Carry out relief purposes using trimming stone and steel burs 2.4 Finish abrasion with emery cloth and sandpaper mounted on mandrels						
General Objective 3.0: Know how to festoon and stipple appropriate areas of the denture and place back on the articulator						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Festooning and stippling 3.1 Explain the purposed of festooning and stippling 3.2 Identify the areas for festooning and stippling dentures 3.3 Festoon and stipple denture 3.4 Place back the denture on the articulator to check occlusion and articulation						
General Objective 4.0: Understand the polishing of dentures using polishing materials						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Polishing of Denture						

4.1 Identify polishing materials e.g. pumice, witing, tripolic, etc. 4.2 Describe the texture of the various materials in 4.1 above 4.3 Polish denture using the materials in 4.1 above. 4.4 Define beilby layer 4.5 Observe the beilby layer on the polished denture 4.6 Describe the effect of beilby layer on the polished denture						
General Objective 5.0: Understand the use of squash bits or articulation paper marks for spot grinding						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Uses of squash bite for sport-grinding 5.1 Define squash bits 5.2 Define articulation paper						

5.3 Identify the use of 5.1 and 5.2 above 5.4 Mount assembled dentures in articulator 5.5 Sport-grind the occlusal surface of the denture using bull technique						

PROGRAMME: HND DENTAL TECHNOLOGY				
COURSE TITLE: ORTHODONTIC TECHNOLOGY II				
COURSE CODE: DTE 412				
DURATION	**Lecture:- 2**	**Tutorial:-** hours	**Practical:- 2** hours	**Total:-** 60 hrs
CREDIT UNITS: 3				
GOAL: This course is designed to provide the students with an advance knowledge in orthodontic technology				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				
1.0 Understand the principles of design of removable Orthodontic appliances 2.0 Know different types of basic removable Orthodontic appliance 3.0 Understand the procedure for correcting the irregularities in the dental arch 4.0 Know the effect of forces on teeth and their supporting tissues				

5.0 Know the components and materials used in Orthodontic appliances 6.0 Know the construction of Orthodontic appliances

PROGRAMME:HND DENTAL TECHNOLOGY						
COURSE TITLE: ORTHODONTIC TECHNOLOGY II		**Course Code: DTE 412**		**Contact Hours: 60hrs**		
COURSE SPECIFICATION: Theoretical content			**Practical Content:** 2 hrs			
General Objective 1.0: Understand the principles of design of removable Orthodontic appliances						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Removable Orthodontic appliances 1.1 Define the following terms i. Retention and ii. Anchorage In relation to orthodontic technology 1.2 Explain the principles of retention and anchorage in relation to Orthodontic appliances 1.3 Identify the teeth and tissues to be used for anchorage and retention						

1.4 Identify the areas to be covered by the appliances						
General Objective 2.0: Know different types of basic removable Orthodontic appliance						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Removable Orthodontic Appliances 2.1 Define the following appliances i. Myfo-functional ii. Acvtivators 2.2 Identify the uses of each group in 2.1 above.						
General Objective 3.0: Understand the procedure for correcting the irregularities in the dental arch						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Indications for use 3.1 Identify tht e different irregularities of the dental arch						

3.2 Choose the correct appliance to regularise the irregularities identified in 3.1 above						
General Objective 4.0: Know the effect of forces on teeth and their supporting tissues						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Effect of forces on teeth 4.1 Explain the tooth movement in relation to orthodontic appliances 4.2 Observe the effect of tooth and supporting movement on the underling tissue (e.g deposition, resubsion						

and facial profile improvement). 4.3 Assess the success/failure of 4.2 above						
General Objective 5.0: Know the components and materials used in Orthodontic appliances						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Components and materials 5.1 Identify the components and materials used in Orthodontic appliances 5.2 Use each of the components and materials listed in 5.1 above for appropriate cases of dental mal-formation						
General Objective 6.0: Know the construction of Orthodontic appliances						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**

Construction of appliances 6.1 Explain the need to obtain a model of the patients mouth 6.2 Describe appropriate appliance required for treatment 6.3 Identify appropriate gauges of hard stainless steel wire required for the components 6.4 Construct components in accordance with the identified gauges in 6.3 above						

6.5 Lay wax pattern of the base of the appliances						
6.6 Flask and park appliance for curing						
6.7 Cure appliance using correct curing cycle						
6.8 Deflask appliance and finish						

PROGRAMME: HND DENTAL TECHNOLOGY				
COURSE TITLE: METALLIC PROSPTHODONTIC DENTURES I				
COURSE CODE: DTE 413				
DURATION	**Lecture:- 2**	**Tutorial:-** hours	**Practical:- 4** hrs	**Total:- 90 hrs**
CREDIT UNITS: 4				
GOAL: This course is designed to provide the student with a knowledge of the use of metallic alloys for construction of dental prosthetics				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				
1.0 Know the materials for construction of metallic dentures 2.0 Understand the properties of materials for construction of metallic dentures 3.0 Know how to cast impressions and prepare models for surveying 4.0 Know how to survey, design and duplicate model				

PROGRAMME:HND DENTAL TECHNOLOGY		
COURSE TITLE: METALLIC PROSPTHODONTIC	**Course Code: DTE 413**	**Contact: 90 hrs**

DENTURES I						
COURSE SPECIFICATION: Theoretical content				**Practical Content: 4 hrs**		
General Objective 1.0: Know the materials for construction of metallic dentures						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Alloys/Materials for construction 1.1 Identify non-precious alloys used in metallic prosthodontics e.g. gold 1.2 Identify non-precious alloys used in the construction of metallic prosthodontics e.g. cobalt, chromium (CO/CK), swaged stainless steel, etc. 1.3 Describe the suitability of each type of materials/alloys mentioned in 1.1. and 1.2 above respectively 1.4 Determine the technique to use with each of the materials/alloys described in 1.3 above.						

General Objective 2.0: Understand the properties of materials for construction of metallic dentures						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Properties of materials for construction 2.1 Explain the following terms i. Corrosion resistance ii. Tarnishing iii Malleability iv. Ductility v. Thermal conductivity vi. Dimensional changes 2.2 Describe the manipulation of the materials in 1.1. above in relation to metallic denture construction in terms of: i. Heat treatment ii. Hardening heat treatment iii. Annealing iv. Work hardening 2.3 Explain the effect of the treatment in 2.2. above on the alloys						

2.4 Know how to cast impression and prepare models for surveying						

General Objective 3.0: Know how to cast impressions and prepare models for surveying						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Casting of impression and preparation of models 3.1 Cast impression using stone plaster 3.2 Dry out the models 3.3 Trim model to appropriate size and shapes						
General Objective 4.0: Know how to survey, design and duplicate model						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Surveying 4.1 Determine the tilt of the model on the surveyor table 4.2 Establish correct path of insertion and removal 4.3 Fix appropriate surveyor accessories to determine department of undercut and inscribe the survey line.						

Designing 4.4 Identify major clinical preparation on model e.g. rest preparation of rest seats. 4.5 Determine the position of clasps 4.6 Design main frame work for the metallic structure of the denture 4.7 Cut in peripheral troughs for design outline 4.8 Build ledges below survey lines on teeth to be clasped. 4.9 Soak repaired model in cold water **Duplication** 4.10 Secure model on bottom cover of duplicating flask with plasticine 4.11 Heat reversible						

hydrocolloid to correct temperature and consistency using dental gel or any other appropriate machine. 4.12 Put back the top half of flask and fill with reversible hydrocolloid, avoiding trapping of air (fill from one side only) 4.13 Keep flask in cold water for gel to set 4.14 Remove model from gel in the flask 4.15 Fill reversible hydrocolloid mould with refractory model materials to obtain refractory model.						

PROGRAMME: HND DENTAL TECHNOLOGY
COURSE TITLE: SCIENCE OF DENTAL MATERIALS (Ceramics) III

COURSE CODE: DTE 414				
DURATION	**Lecture:- 1hr**	**Tutorial:-** Hours	**Practical:-** hr	**Total:- 15 hrs**
CREDIT UNITS: 1				
GOAL: This course is designed to give the student in depth knowledge of the ceramics used in the dentistry and its application to crown fabrication				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				
1.0 Understand history, production, types and uses of dental ceramics in dentistry 2.0 Understand the processes involved in ceramics crown fabrication				

PROGRAMME:HND DENTAL TECHNOLOGY						
COURSE TITLE: SCIENCE OF DENTAL MATERIALS (Ceramics) III			**Course Code: DTE 414**		**Contact Hours: 15 hrs**	
COURSE SPECIFICATION: Theoretical content			**Practical Content:**			
General Objective 1.0: Understand history, production and used of dental ceramics in dental technology						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
History of Dental ceramics 1.1 Define dental ceramics 1.2 Identify types of ceramics used in dentistry e.g. I. crystalline II. Non-Crystalline						

Explain the use of each types in 1.2 above State history of dental ceramics (Porcelain). State the advantages and disadvantages associated with the uses of ceramics for dental restoration. 1.3 Describe production of dental ceramics (porcelain) 1.4 List constituent of dental ceramics (porcelain), e.g. I. Silica II. Feldspar III. Clay IV. Other ceramics 1.5 Enumerate the properties of dental ceramics e.g. a polymorphism 1.6 Explain the use of dental ceramics in conservative dentistry. a. Bonded						

b. pressables						
3.0 **General Objective 2.0:** Understand the processes involved in ceramics crown fabrication						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
3.1 sciences of bonding porcelain to metal 3.2 chemical processes involved porcelain baking						
General Objective 3.0:						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
General Objective 4.0:						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**

PROGRAMME: HND DENTAL TECHNOLOGY				
COURSE TITLE: PROFESSIONAL ETHICS AND JURISPRUDENCE				
COURSE CODE: DTE 415				
DURATION	**Lecture:-**	**Tutorial:-** Hours	**Practical:-** hours	**Total:- 15 hrs**
CREDIT UNITS:				
GOAL: This course is designed to				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				
1.0 Know the role of Dental Technologist Registration Board in the practice of dental technology profession. 2.0 Know the activities of Associates of Dental Technologist of Nigeria. 3.0 Understand the relationship between technologist and patient. 4.0 Understand the inter-professional relationships in dentistry. 5.0 Understand procedures of setting up general dental laboratory practice. 6.0 Understand the skill, mal-practice and general outlook of health care law in Nigeria.				

PROGRAMME:HND DENTAL TECHNOLOGY		
COURSE TITLE: PROFESSIONAL ETHICS AND	**Course Code: DTE 415**	**Contact Hours: 15 hrs**

JURISPRUDENCE		
COURSE SPECIFICATION: Theoretical content	**Practical Content:**	
General Objective 1.0: know the role of dental Technologist Registration board in the practice of dental technology profession.		

Specific Learning Objectives:	Teachers Activities	Learning Resources	Specific Learning Objectives:	Teachers Activities	Learning Resources	Evaluation
1.1 Explain the DTRB Decree 43 of 1987 1.2 Explain the decree in 1.1 above. 1.3 Explain the right of the Board to regulate professional qualifications required before entering practices. 1.4 Describe how the Board carries out the functions in 1.2 above. 1.5 State the committees of the board and the functions of various committees.						

General Objective 2.0: Know the activities of Association of Dental Technologist of Nigeria.						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Activities of Association of Dental Technologist of Nigeria 2.1 Explain the history of the Association of Dental Technologist of Nigeria. 2.2 Explain the differences between activities of the Board and the Association. 2.3 Explain the duties of the Association to the members of the profession. 2.4 Explain the responsibilities of members of the Association.						
General Objective 3.0: Understand the relationship between technologist and patient.						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Relationship between Technologist and patients 3.1 Explain the responsibility of dental technologist to welfare of patients and their relatives. 3.2 Explain why its is unethical to enter into any arrangement whereby patients are directed						

to your practice. 3.3 Explain that a dental technologist has a right to accede to the request of a patient, in so far that patient is not being treated by another technologist. 3.4 Explain the implications of using patients from one laboratory to another. 3.5 Describe the gravity of condemning, in presence of your patients, the work of your colleagues.						
General Objective 4.0: Understand the inter-professional relationships in dentistry						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Inter-professional relationship in dentistry 4.1 Explain the relationship of the dental technology profession with: a. Dentist b. Dental therapist c. General medical practitioner d. Ophthalmologists e. Dietitian						

4.2 Explain why in the course of referral from 4.1 above nothing should be done to disturb the confidence of patients.						
General Objective 5.0: Understand procedures of setting up general dental laboratory practice.						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Setting up of General dental laboratory practice 5.1 Describe problems associated with setting up a new dental laboratory practices 5.2 Explain the need for involving solicitors when setting up new practice with associates or partners. 5.3 List advantages and disadvantages of setting up new dental laboratory close to an existing one. 5.4 Explain your right as a citizen to take part in press, television and radio on professional matters, without going fould of ethical laws.						

General Objective 6.0: Understand the skill, mal-practice and general outlook of health care law in Nigeria.						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Health care law in Nigeria 6.1 Define 'skill' and malpractice in the profession of dental technology 6.2 Describe infamous or disgraceful conduct in dental technology progressional aspect 6.3 List offences which may fall in 6.1 above 6.4 Explain the legal aspect of health care law as related to pitfalls in practices of dental technology.						

PROGRAMME: HIGHER NATIONAL DIPLOMA IN DENTAL TECHNOLOGY				
COURSE TITLE: RESEARCH METHODOLOGY/PROJECT WRITING				
COURSE CODE: EHT 411				
DURATION:	Lecture: - 1	Tutorial: -	Practical: - 2	Total: (45)hrs
CREDIT UNITS: 3 C U				
GOAL: This course is designed to equip students with the knowledge of research skills, being inquisitive and discretional in presenting research outcome in a logical order				
GENERAL OBJECTIVE: On completion of the course, the student should be able to:				
1.0 Know the types, process and steps involved research work. 2.0 Understand the scientific approach to research work. 3.0 Know how to design a research work. 4.0 Understand research problems. 5.0 Understand the formulation and validation of hypothesis. 6.0 Understand variables in research work. 7.0 Understand sample and sampling techniques. 8.0 Know how to review literature. 9.0 Know the tools and techniques of data collection. 10.0 Understand data analysis techniques.				

11.0 Know how to report a research findings..						
COURSE SPECIFICATION: Theoretical Content			Course Specification: Practical Content			
General Objective 1.0: Know the types, process steps in and characteristics of research.						
Specific Learning Objective	**Teachers Activities**	**Learning Resources**	**Specific Learning Objective**	**Teachers Activities**	**Learning Resources**	**Evaluation**
1.1 Define research methodology 1.2 Explain types of research work 1.3 Discuss the problems of research work e.g. conceptualization, generalization etc. 1.4 Discuss steps in research process. 1.5 Explain the characteristics of research methodology 1.6 Identify ethical considerations in Research work	Explains research, its types and problems. ii. Explain the characteristics of a research work and its steps. iii. Explains ethical considerations in research work	Textbooks, whiteboards, marker, laptop, overhead projectors, journals, writing materials.	1.1 Prepares a research work for the students to handle each of the stages. Analyze research problems and how to resolve it	Taking students on a field trip to some industries and research institutes	Logistics for the field trip. Organizing and arrangement for field trips Scientific materials/ equipment, protective materials such overall, rubber boots, nose mask, goggle, hand gloves, head gear etc.	Assignment, writing reports on different research work. Test
General Objective 2.0: Understand scientific approach to research						
2.1 Discuss the methods of science in research.	Explain the methods,	Internet and Relevant	Demonstrates scientific research and ways of	Field trip to scientific programmes to	Scientific materials/	Assignment, test, quiz

2.2 State the aims of science in research 2.3 Explain the functions of science in research. 2.4 Compare science and common sense in research.	aims and functions of science in research ii. Explain the differences between science and common sense	websites, textbooks, whiteboards, marker, laptop, overhead projectors, journals, writing materials.	achieving a good research work	understand the processes involved.	equipment and protecting materials	
General Objective 3.0: Know how to design a research work						
3.1 Explain research design. 3.2Discuss the purposes of research design. 3.3 Explain the principles of research design. 3.4 Identify design criteria. 3.5 Describe the process of writing a research proposal	Explain the meaning, purpose and principles of research design. ii. Explain design criteria. iii. Guide students to write research proposals Give assignment	Textbooks, whiteboards, marker, laptop, overhead projectors, journals, writing materials.	Demonstrates design criteria and process of writing a research proposal	Showing examples of research design and previous research proposal	Previous research works, journals, books, presentations	Write a research proposal, indicating a specific research design, assignment, test

General Objective 4.0: Understand research problem						
4.1 Define research problems. 4.2 Identify sampling problems. 4.3 Formulate research questions. 4.4 Identify the steps in the evaluation of a research problem. 4.5 State the features of a researchable problem. 4.6 Critique sample research problem.	Explain research problem. ii. Describe sample problems. iii. Describe the formulation of research questions. iv. Explain the steps in the evaluation of research problem. v. Explain researchable problem and its features	Textbooks, whiteboards, marker, laptop, overhead projectors, journals, writing materials.	Analyzing sample problems and formulating research questions	Show various examples of research problems and the ways of correcting it	Previous research works, journals, books, presentations	Students prepares a sample from a given population using a specific sampling technique
General Objective 5.0: Understand formulation and validation of hypothesis						
5.1 Define hypothesis. 5.2 Define validation. 5.3 Explain specific and general hypothesis.	Explain hypothesis and its characteristics. ii. Explain validation and its problem in research work.	Textbooks, whiteboards, marker, laptop, overhead projectors, journals,	Provision of previous research works and comparing the hypotheses to identify specific and general	Formulating specific or general hypothesis analyzing the null and alternate	Previous research works, journals, books, presentation	Students creates a specific and general hypothesis in a relation to a

5.4 Relate hypothesis to statement of problem. 5.5 Explains the difference between null and alternate hypothesis. 5.6 Discuss the problems of validation in research	iii. Distinguish among specific, general null and alternate hypothesis. iv. Describe the relationship between hypothesis and statement of problem.	writing materials.	among them. Deducing null and alternative hypothesis in previous presented research work	hypothesis. Creating statements of problems and validating the research work	s	particular statement/project
General Objective 6.0: Understand variables in research work						
6.1 Define variables in research work 6.2 Explain types of variables. 6.3 Discuss consideration for choice of variables. 6.4 State control problems of variables 6.5 Explain the relevance of variables to research work	Explain variables, their types and relevance. ii. Explain consideration in the choice of variables. iii. Explain control problems of variables	Textbooks - Journals	Showing the use of variables in other prepared research works and its peculiar characteristics	Showing types of variables in previous work and how to choose a particular variables for different research work	Previous research project/work, assignments, journals and presentations	Student chooses a variables in a specific research assignment
General Objective 7.0: Understand sample and sampling techniques						
7.1 Explain the following: • Population • Population Sample • Population Representation • Types of sampling methods	Explain population, sample and representation. ii. Describe types of sampling methods. iii. Explain need for	Books, journals, internet, chalk board, writing materials	To demonstrate a community as a population and creating a sample and representation from the population	Field trip to the chosen community and showing the process of arriving at a sample or representation from that	Logistics to the community, books, journals, presentations, materials for	Assignment, test, group work, quiz

7.2 Discuss the need for samples	sample within a population			community	references	
General Objective 8.0: Understand how to review literature						
8.1 State the relevance of literature review in research work. 8.2 Outline the sources of literature. 8.3 Explain organization and referencing of literature	Explain the relevance of literature review in research. ii. Explain the sources of literature iii. Describes the organization and referencing of literature.	Textbooks, whiteboards, marker, laptop, overhead projectors, journals, writing materials.	Presentation of previous books, newspaper, presentation and journals to show its literature and sources	Field trip to library and other archives areas to see various literature and their sources	Logistics, journals, books, internet, archives, presentations	Give assignment, test, group work
General Objective 9: Know the tools and techniques for data collection						
9.1 Define research instrument. 9.2 Discuss types of research instruments 9.3 Enumerate characteristics of research instruments.	Explain the following research instruments: 1. Questionnaire	Textbooks, whiteboards, marker, laptop, overhead projectors, journals, writing	Identifying research instruments, presents its characteristics and problems associated with	Presenting previous research work to show the instrument used , characteristics	Books, journals, research work, presentation	Group work, assignment, test and quiz

9.4 State the problems associated with various research instruments	2. Observation 3. Interview 4. Ratings, etc. ii. Describe pitfalls of each instrument in above.	materials.	the instruments	and problems		
General Objective 10.0: Understand data analysis techniques						
10.1 Define data analysis. 10.2 Discuss the tools for data Analysis: qualitative and quantitative. 10.3 Explain limitations in each of 10.2 above	Explain data analysis, its tools and limitations	Textbooks, whiteboards, marker, laptop, overhead projectors, journals, writing materials.	Identifying data analysis, tools and its presentation in previous work	Presenting previous research work to show its analysis and tools used	Books, journals, research work, presentation	Group work, assignment, test and quiz
General Objective 11.0: Know how to report research findings						
11.1Define research report writing 11.2 Identify the contents of research report writing. • Introduction • Literature review • Methodology	Explain research report and its contents. ii. Conduct test Guidance for students using examples of good reports. Reference to exercises	Textbooks, whiteboards, marker, laptop, overhead projectors, journals, writing materials.	Discussion on a written research work to the process and steps involved and understanding the importance of presenting accurate research	Presentation of the previous work to show the process of report writing and steps involved. Producing accurate	Books, journals, research work, presentation	Writing of a complete accurate research work Group work, assignment, test and quiz

• Analysis • Results • Discussion • Conclusion • Recommendation • Reference • Appendix 11.3 Discuss the importance of accurate presentation of research report	to review relevant literature etc. Identify the contents of research report. • o Introduction • Literature review • Methodology • Analysis • Results • Discussion • Conclusion • Recommendation • Reference • Appendix		report	research report		

PROGRAMME:	HIGHER NATIONAL DIPLOMA IN DENTAL TECHNOLOGY		
COURSE:	ENTREPRENEURSHIP EDUCATION		
CODE:	EED 413		
DURATION (Hours/Week) **Lecture: 2hrs**	**Tutorial: 0**	**Practical: - 2**	**Total: 4 (60hrs/semester)**
UNITS:	2		
GOAL:	This course is designed to enable the student to acquire knowledge and skills, competencies, understandings and to be innovative, creative and successfully manage personal, community, business and work opportunities.		
GENERAL OBJECTIVES:	On completion of this course, the student should be able to:		

1 Know the history and government efforts in promoting entrepreneurship development in Nigeria
2 Understand the role of personal savings and portfolio investment in National Economic Development
3 Understand various life skills needed by an entrepreneur
4 Understand the various sources of information for entrepreneurship development
5 Know the roles of commercial and development banks in small scale industrial development.
6 Know the functions of various support agencies in small and medium scale industrial development.
7 Understand the activities of different industrial associations in relation to entrepreneurship.
8 Know the functional areas of business
9 Understand the need for business planning.
10 Understand the strategies for consolidation and expansion of a business enterprise
11 Understand the need for management and business succession plan

PROGRAMME:	HIGHER NATIONAL DIPLOMA IN DENTAL TECHNOLOGY					
COURSE:	Entrepreneurship Education	**Course Code:** EED 413		**Contact Hours:** 60		
COURSE SPECIFICATION:	Theoretical Content: 2		Practical Content: 2			
General Objective:	1: Understand the history and government efforts in promoting entrepreneurship development in Nigeria					
Specific Learning Objectives	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives**	**Teachers Activities**	**Learning Resources**	**Evaluation**
1.1 Define an Enterprise 1.2 Identify different forms of Enterprises 1.3 Classify the different forms of enterprises into: private vs. public Profit vs. non-profit Formal vs. informal Individual vs. community Local vs. foreign Business vs. social Small vs. large Manufacturing vs. service Consumer vs. industrial 1.4 Narrate the history of entrepreneurship development in	I. Introduce the terms: Enterprise Entrepreneur Entrepreneurship II. Explain the historical development and role of entrepreneurship in enterprise creation in Nigeria. III. Compare and Contrast, using a relevant film, entrepreneurship in Nigeria with other countries of the world.	Textbooks Classroom resources	Identify features of the types of enterprises identified. Identify entrepreneurial traits, characteristics and qualities. Identify successful entrepreneurs in Nigeria. Write a brief comparison of entrepreneurship in	Guide students to research into different forms of enterprises. Invite a successful entrepreneur to give a talk on traits for successful entrepreneurship. Guide students to search the web on comparative study of entrepreneurship.	Use of internet and relevant video clips Guest speakers from successful businesses	Quiz Test Assignment

	Nigeria. 1.5 Compare the success and impact of entrepreneurship in Nigeria with other Countries of the world: Japan, India, China, Malaysia, South Korea, etc.	IV. List support agencies for SME's in Nigeria-NEPC, IDCs, BOI, NACRDB etc V. Explain government policy on financing SME's		Nigeria with either Japan or Korea			
General Objective:	2: Understand the role of personal savings and portfolio investment in National Economic Development						
Specific Learning Objectives		**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives**	**Teachers Activities**	**Learning Resources**	**Evaluation**
2.1 Define thefollowing; Income, expenditure and savings. 2.2 Explain the role of savings in starting and sustaining businesses. 2.3 List the benefits of interest. 2.4 Explain personal financial planning and management 2.5 Explain shopping		I.Explain savings II.Explain how savings are channeled into productive ventures III. Explain the benefits of interest. IV. Explain the role of budgeting in personal economics	Textbooks, journals and other publications.	2.7 Calculate interestrates. 2.8 Develop personal budget for one month. 2.9 Create a spreadsheet for a budget 2.10 Interpret financial reports 2.11 Describe other investments such as in real estate or stock trading	Show various methods of computing interest Guide students to develop a personal budget for one month Guide students to create a spreadsheet	Textbooks, journals and other publications, computer.	Quiz Test Assignment Examination

habits. 2.6 Explain howtaxes are paid on income that people earnand how income tax is calculated.	V. Describe shopping habits VI. Analyze portfolio investment. VII. Explain thrift societies and how they operate VIII. Explain Tax, and how Personal Income Tax is calculated.			for a budget Guide students on how to read and interpret financial reports annual reports and accounts of quoted companies/institutii ons Expose students to real estates and commodity trading as other forms of investment visit stock/commodity Exchange		
General Objective:	3: Understand various life skills needed by an entrepreneur					
Specific Learning Objectives	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives**	**Teachers Activities**	**Learning Resources**	**Evaluation**
3.1 Identify thecharacteristics of an entrepreneur. 3.2 Define Communication.	I. Explain the characteristics of an entrepreneur.		3.14 Analyse adiagram of communication process. 3.15 Demonstrate skills for	Draw a diagram of the communication process. Use the diagram to		Quiz Test Examination

3.3	Explain the role of Communication in an enterprise. 3.4 Define teamwork and team spirit. 3.5 Identify the characteristics of teams. 3.6 List benefits of teamwork in an enterprise. 3.7 Define leadership. 3.8 List the qualities and characteristics of good leaders. 3.9 Describe a target. 3.10 Explain how targets are set. 3.11 Explain how a target is achieved. 3.12 Explain discipline and self – discipline. 3.13 State the benefits of Personal discipline in the success of an enterprise.	II. Explain communication, its types, process and role in an enterprise. III. Explain teamwork, team spirit, characteristics of teams, and benefits of team work. IV. Explain decision making, types and decision making, types and decision making process. V. Explain leadership, types of leaders, leadership styles and qualities of good leadership.		teamwork 3.16 Demonstrate leadership skills. 3.17 Prepare a daily routine of personal activities. 3.18 Set achievable targets for self.	demonstrate chain of communication Organise students into group. Assign each team a responsibility that will enable them demonstrate team work/spirit. Let them select their leaders. Invite a seasoned Administrator/ Manager to talk to students on leadership. Guide students to prepare a “to-do” list student should set achievable		

	VI. Explain targets, how they are set and indications of achievement. VII. Explain the sources and benefits of discipline.			targets. Explain indicators of target achievement.		
General Objective:	4: Understand the various sources of information for entrepreneurship development					
Specific Learning Objectives	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives**	**Teachers Activities**	**Learning Resources**	**Evaluation**
4.1 Identify nature andtype of information required by entrepreneurs. 4.2 Identify the sources of the information required in 4.1 above. 4.3 Identify organizations and agencies involved in the promotion and development of	I. Explain nature of information required by entrepreneurs: . marketing . technical . ICT	Text Books Journals Publications Video Film TV & VCR	4.7 Obtain then required information from the net. 4.8 Classify the information into: - . marketing - . technical - . ICT - . financial - . legal 4.9 Develop a	Guide students to conduct a web search on information required by entrepreneurs. Ask students to develop a similar file using appropriate software.	Internet Computer Workshops	Quiz Test Assignment

entrepreneurship. 4.4 Explain the role of banks and financial institutions in enterprise promotion and development. 4.5 Describe the contributions of government agencies in sourcing information. 4.6 Describe methods of obtaining assistance from the above organizations.	. financial . legal II. Explain sources of the information above: . catalogues . business associations . government publications . banks . mass media . libraries . consultants . assisting agencies . trade exhibitions/ fairs . Internet/websites.		resource file containing samples and addresses for each category of information sources 4.10 Write a report on the visit 4.11 Identify clients responsible for providing assistance under each method.	Take students to seminars workshops trade fairs, Trade exhibitions as sources of entrepreneurship information Guide students to identify clients responsible for providing assistance under each method: . personal contacts: - entrepreneurs - professionals - customers . observation: -trade exhibition . interviews: - customers		

	III. Explain the role of the various organizations and agencies involved in the promotion and development of entrepreneurship p. IV. Explain methods of obtaining assistance: . personal contacts . observation . interviews . direct mail . reading . Web/internet research.			- suppliers - competitors - distributors - ex-employees - agents - experts and practitioners . reading: - reports and statistics - media -literature etc. . web and internet - competitors - markets - industry information - govt.		

				departments.		
General Objective:	5: Appreciate the roles of commercial and development banks in small scale industrial development					
Specific Learning Objectives	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives**	**Teachers Activities**	**Learning Resources**	**Evaluation**
5.1 Identify financialinstitutions involved in entrepreneurship development. 5.2 Describe the assistance provided by commercial banks. 5.3 Explain the role of development banks in the promotion and development of small and medium enterprises (SMEs) 5.4 Assess government policy on financing SMEs 5.5 Explain the process of opening and operating a healthy Bank	I. Explain financial institutions involved in entrepreneurship development. II. Explain the roles of commercial and development banks in the promotion and development of SMEs III. Analyze government policy on financing SMEs	Text Books Journals Publications Video Film TV & VCR	5.6 Guide students on how to maintain good banking relationship	Invite a bank official to give a talk on role of financial institutions in entrepreneurship.	Internet Textbooks Journals Resource person	Quiz Test Assignment

Account						
General Objective:	6: Know the functions of various support agencies in small and medium scale industrial development.					
Specific Learning Objectives	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives**	**Teachers Activities**	**Learning Resources**	**Evaluation**
6.1 Identify varioussupport agencies involved in the promotion and development of entrepreneurship in Nigeria. 6.2 Explain the following and their roles in the promotion and development of entrepreneurship : - . NEPC - . NIPC - . NERFUND - . NDE - . RMRDC - . SMEDAN - . IDC - . TBICs - . Federal and State Ministries of Commerce/ Industry 6.3 Explain the	I. Explain the role and functions of the various support agencies involved in the promotion and development of entrepreneurship II. Explain the roles of research and academic institutions of higher learning in the development of entrepreneurship	Text Books Journals Publications	6.4 Distinguish among the functions of each agency.	Show transparency of the various support agencies involved in entrepreneurship development and promotion Invite officers of identified agencies to explain their operations.	Computer or Overhead Projector Resource Persons	Quiz Test Assignment

	assistance rendered by research and academic institutions in entrepreneurship development.					
General Objective:	7: Understand the activities of different industrial associations in relation to entrepreneurship.					
Specific Learning Objectives	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives**	**Teachers Activities**	**Learning Resources**	**Evaluation**
7.1 Explain themeanings of the following acronyms: - . NASSI - . NASME - . NACCIMA - . MAN - . NECA - . SMEDAN 7.2 Describe the roles and functions of each of the above in the development and promotion of entrepreneurship	I. Explain the role of the National Association of Small Scale Industrialists (NASSI) in entrepreneurship. II. Describe the role and functions of the National Association of Small and Medium Enterprises (NASME) in entrepreneurship. III. Describe City,	Text books Journals Computer Projector	7.3 Carry out an excursion to a trade fair and prepare a report on the visit.	Organize an excursion to recognized trade fair closest to you	Computer Projector Guest speaker Internet search.	Quiz Test Assignment

	State and Bilateral Chambers of Commerce and Industry and their roles in entrepreneurship development. IV. Explain the functions and role the National Association of Chambers of Commerce, Industry, Mines and Agriculture (NACCIMA) in entrepreneurship development. V. Explain the roles and functions of the Manufacturers Association of Nigeria (MAN) in entrepreneurship development.					

	VI. Describe Nigerian Employer's Consultative Association (NECA) and its role in entrepreneurship.					
General Objective:	8: Know the functional areas of business					
Specific Learning Objectives	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives**	**Teachers Activities**	**Learning Resources**	**Evaluation**
8.1 Explain basicmanagement concepts and functions. 8.2 Explain the basic functions of human capital management in a small enterprise. 8.3 Explain the cycle of business growth and need for adequate manpower development at each stage. 8.4 Explain labour relations. 8.5 Describe the finance function in a small enterprise.	I. Explain basic management concepts and Functions. II. Explain the basic functions of human capital management in a small and growing enterprise. . Defining human resources objectives . Designing dynamic organization structures to	Text Books Journals Publications Video Film TV & VCR	8.14 Explain how to carryout manpower, procurement and maintenance planning. 8.15 Demonstrate how to draw up task/job description and assign to staff.	Guide student to draw up an organogram. Guide student to draw up manpower and resource need for a 3-year circle.	Computer and accessories, internet and visitations.	

8.6	List the books of account necessary for operation of small enterprise.	support the business growth strategy . Planning for HR needs in line with growth . Recruitment and selection procedures for productive staff . Training and development of productive staff . Enhancing performance through motivation and participation . Communication with staff to enable growth . Establishing effective work relationships required for growth . Maintaining employee records					
8.7	Explain financial regulations and taxes affecting small enterprise operation.						
8.8	Explain the significance of insurance coverage for a small enterprise						
8.9	Explain theimportance of marketingmix to the growth and expansion of a small enterprise.						
8.10	Explain the production function in a small enterprise:						
-	. product planning and control						
-	. production forms and techniques						
-	. factory and facilities layout						
-	. Operational						

	bottlenecks in the areas of order intake, procurement, storage and inventory control, distribution, safety and health etc. 8.11 Explain the importance of quality control and production standards. 8.12 Explain the need for maintenance management with special reference to: - . routine maintenance - . scheduled maintenance - . preventive - maintenance - . spare parts management 8.13 Explain staff training and retraining needs of an enterprise.	and administration . HR growth plan. III. Explain the finance function in a small and growing enterprise: . Identify sources of business finance and financial needs for a small business. . Defining the finance growth objectives . Analyzing and interpreting financial statements for growth . Financial planning and control for growth . Capital investment appraisal techniques					

	. Management of working capital . How to safeguard business resources IV. Explain financial record keeping and books of account necessary in a small enterprise. V. Explain how to prepare simple formats of prime books of account. VI. Explain financial regulations and taxes affecting operations of small enterprises.					

	VII. Explain significance of insurance coverage for small enterprises. VIII. Explain the marketing function in a small and growing enterprise. IX. Explain the production function in a small enterprise: . product planning and control . production forms and techniques . factory and facilities layout . Operational bottlenecks in the areas of order intake,					

	procurement, storage and inventory control, distribution, safety and health etc. X. Explain the importance of quality control and production standards. XI. Explain the need for maintenance management with special reference to: routine maintenance . scheduled maintenance . preventive maintenance					

	. spare parts management XII. Explain the need for regular capacity building for staff.					
General Objective:	9: Understand the need for business planning.					
Specific Learning Objectives	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives**	**Teachers Activities**	**Learning Resources**	**Evaluation**
9.1 Identify a viablebusiness opportunity based on: - . demand - . availability of resources - . import substitution - . export oriented products. 9.2 Explain the different steps in preparing a preliminary project report 9.3 Explain how to formulate a project report. 9.4 Explain how to analyze a project	I. Explain how to identify viable business opportunities based on : . demand . availability of resources . import substitution . export oriented products. II. Explain the	Text Books Journals Publications	9.5 Analyze a sample project report with emphasis on technical, operational, economic viability, methodology,cost-benefit (CBA) analysis on equipmentdevelopment cost, running cost etc	Guide students to analyze a sample project report Guide students to prepare a preliminary project report. Guide students to complete the business plan of their earlier chosen project.	Computer and internet facilities.	Quiz Test Assignment

report	different steps in preparing a preliminary project report. III. Explain how to prepare and analyze a preliminary project report.					
General Objective:	10: Understand the strategies for consolidation and expansion of a business enterprise					
Specific Learning Objectives	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives**	**Teachers Activities**	**Learning Resources**	**Evaluation**
10.1 Explain thejustification for business diversification and expansion. 10.2 Explain the process of growth, diversification and expansion in an enterprise. 10.3 Evaluate the strategies for consolidation and expansion of business	I. Explain the concept of strategy and types of strategy. II. Explain business growth, expansion and diversification.	Textbooks	10.7 Working in pairs the students should analyze a particular business organization and suggest possible solutions relating to growth and the influence of multinational organizations. 10.8 Students to	Use a case study history of the development of a Nigerian business to show the stages of growth, diversification and development. Focus on a chosen industry and the need to diversify. Organise/project	Use of internet and relevant video clips TV, Video/CD	Quiz Test Assignment

	ventures. 10.4 Explain the characteristics of franchise, license and patent systems ofenterprise. 10.5 Explain how multinational companies operate. 10.6 Explain how to do business across Nigerian borders.	III. Describe strategies for consolidation and expansion of business. IV. Describe the various types of enterprises and their mode of operation. V. Explain the characteristics of franchise, licensing and patents. VI. Relate franchising, licensing and patents to the operations of multinational corporations.		make class presentation 10.9 Identify examples of franchise and license operations in Nigeria. 10.10 Identify national and international bodies responsible for patents.	presentation sessions and guide students to analyse the project. Guide students to search the web on the operations of franchises, licensesand patents. Invite Officials of NEXIM, NEPC, NEPZA to address the students on their operations. Guide students to analyse franchise and licensing opportunities..		

	VII. Explain: - International trade policies and laws - Foreign cultures - International trade finance.					
General Objective:	11: Understand the need for management and business succession plan					
Specific Learning Objectives	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives**	**Teachers Activities**	**Learning Resources**	**Evaluation**
11.1 Explain management succession plan and reasons for corporate formations. 11.2 Explain the value of continuity and perpetuity in	I. Describe the concept of management succession plan. II. Explain the		11.4 Prepare a hypothetical succession plan for a business 11.5 Describe steps needed to elect Board of Directors for a company	Guide students to prepare a succession plan. Guide students to negotiate an exit		Quiz Test Assignment

	enterprise. 11.3 Explain Exit planning.	benefits of employee participation in corporate ownership.			plan. Guide students to elect Board of Directors and role play a boardroom session.		

PROGRAMME: HND DENTAL TECHNOLOGY				
COURSE TITLE: INTRODUCTION TO MAXILLO-FACIAL PROSTHETICS				
COURSE CODE: DTE 421				
DURATION	**Lecture:-**	**Tutorial:-** Hours	**Practical:-** hours	**Total:- hrs**
CREDIT UNITS:				
GOAL: This course is designed to provide the students with basic knowledge of Maxillo-Facial prosthetics				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				
1.0 understand introductory treatment of fractures related to Maxillo-facial region. 2.0 Know the classification and types of fractures associated with: i. The skull bones ii. The larynx bones 3.0 Understand basic terms in Maxillo-Facial prosthetics 4.0 Understand the basic management principles of cleft lip and palate cases.				

5.0 Understand rudimentary facial prosthetics.

PROGRAMME:HND DENTAL TECHNOLOGY						
COURSE TITLE: INTRODUCTION TO MAXILLO-FACIAL PROSTHETICS		**Course Code: DTE 421**		**Contact Hours: hrs**		
COURSE SPECIFICATION: Theoretical content			**Practical Content:**			
General Objective 1.0: Understand introductory treatment of fractures related to Maxillo-Facial region.						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Fractures related to Maxillo-facial region 1.1 Define maxilla-facial prosthetics 1.2 Explain the importance of maxilla-facial prosthetics in contemporary dental medical practice e.g interdisciplinary relationship with other						

specialties, like general surgery E.N.T, radiotherapy, paediatric surgery, etc 1.3 Outline the history of maxilla-facial prosthetics. 1.4 Describe the outlay of a typical maxilla-facial laboratory and its essential requirement e.g. tools and equipment 1.5 Design maxilla facial laboratory taking into consideration among others, safety precautions. 1.6 Identify common fracture sites in the maxilla-facial region 1.7 Identify common maxilla-facial appliances in 1.7 above e.g. various types of acrylic splint; Eyelet wiring, etc.						

1.8 Construct some of the appliances in 1.7 above e.g various types of acrylic splint; eyelet wiring, etc.						

General Objective 2.0: know the classification and types of fractures associated with:						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
The skull and larynx bones **i. The skull bones** **ii. The larynx bones** 2.1 List the bones of the skull and their associated common fracture sites. 2.2 Identify the bones in 2.1 above using the following: i. Cavider ii. Flip charts iii.Slides 2.3 Identify maxilla-facial appliances that are used in the management of fractures e.g. Barrel Bandage skull plates, etc. 2.4 Construct each of the appliances in 2.3 above. 2.5 List the bones of the larynx 2.6 Locate the bones of the larynx 2.7 Describe management of the bones of the larynx. 2.8 Construct various types of						

appliances used in the management of the fractures of larynx bones.						
General Objective 3.0: Understand basic terms in maxilla-facial prosthetics.						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Terms in maxilla-facial prosthetics 3.1 Define and explain the following terms i. Prosthetics ii. Prostheses iii. Fixation **i.** Immobilisation **ii.** I.M.F (inter maxillary fixation) **iii.** Trauma **iv.** Congenital Deformities **v.** Hemi-Resection **vi.** Surgical splint **vii.** Surgical appliance **viii.** Localisation in relation to maxilla-facial prosthetics. 3.2 List relevant appliances in 3.1 (i), (iii), (iv), (vii); (ix); (x) (xii) above e.g. obturator, jaw exercises, chin support, Acrylic splints, etc						

3.3 Describe the functions of the appliances, in 3.2 above. 3.4 Identify the appliances in 3.2 above 3.5 Classify various types of appliances used in maxilla-facial prostheses, e.g. splints, prosthesis, etc. 3.6 List common materials used in maxilla-facial prosthetics 3.7 Identify the materials in 3.6 above e.g. silicones, ferrous oxide dyes, Adhesives, etc. 3.8 Describe the composition and properties of the materials in 3.7 above 3.9 Describe the principles and procedures for the construction of various appliances from each group of appliances in 3.5 above 3.10 Construct the appliances from each groups in 3.5 above.						
General Objective 4.0: Understand the basic management principles of cleft lip and palate cases.						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**

Basic management principles of cleft lip and palate cases 4.1 Define and explain the following: i. Congenital deformities in relation to cleft management ii. Cleft lip iii. Cleft palate iv. Unilateral cleft v. Bilateral cleft vi. Pre-maxilla vii. Urula viii. Fistula ix. Extra-oral anchorage 4.2 Describe the anatomy, aetiology and bone growth in relation to congenital deformities in paediatric patients with special attention to neo-natal developments. 4.3 Identify using slides, flip charts, etc. prominent features relating to 4.2 above. 4.4 Classify clefts 4.5 Produce model cast of various classes of cleft cases						

4.6 Describe the procedure for the construction of special trays for cleft managements 4.7 Construct special trays for secondary impression of clefts 4.8 Describe the procedures for the construction of model cast from secondary impressions 4.9 Construct model cast in 4.4 above 4.10 Describe the principles and procedures for the construction of the following: (i) Feeding plates (ii) Presurgical/Haemostatic appliances (iii) presurgical orthopaedic appliances 4.11 Construct appliances from 4.10 above.						
General Objective 5.0: Understand rudimentary facial prosthetics						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Rudimentary facial prosthetics 5.1 Define and explain facial prosthetics						

5.2 List various types of facial prosthetics. 5.3 Describe the anatomy of the head, nothing the influence of surrounding muscles, bones, etc. on the construction of facial prostheses 5.4 Identify common relevant features in 5.3 above 5.5 Outline the history of facial prostheses and the need for facial prosthetics treatment 5.6 Identify various common facial prostheses 5.7 List commonly used facial prostheses materials e.g. silicones, acrylic ferrous oxide dyes, etc. 5.8 Identify the materials in 5.7 above 5.9 Describe the composition and properties of the materials in 5.7 above 5.10 Describe the principles and constructional procedures						

of various facial prostheses 5.11 Construct some commonly used facial prostheses. 5.12 Construct some commonly used facial prostheses						

PROGRAMME: HND DENTAL TECHNOLOGY				
COURSE TITLE: METALLIC PROSTHODONTICS DENTURES I				
COURSE CODE: DTE 422				
DURATION	**Lecture:-**	**Tutorial:- 1 hrs**	**Practical:- 3 hours**	**Total:- 60 hrs**
CREDIT UNITS:				
GOAL: This course is designed to provide the student with the understanding of the principles and techniques employed in the handling of wrought alloys like lingual bars and clasps for dental prosthetics				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				
1.0 Understand the composition and properties of wrought alloys. 2.0 Know the principles and techniques employed in soldering and casting and types of fluxes used in dental alloys 3.0 Understand the composition and applications of anti-fluxes commonly used in dental alloys 4.0 Understand casting procedures and investment materials employed in casting and the use of picking solution.				

PROGRAMME:HND DENTAL TECHNOLOGY		
COURSE TITLE: METALLIC PROSTHODONTICS DENTURES I	**Course Code: DTE 422**	**Contact Hours: 60 hrs**

COURSE SPECIFICATION: Theoretical content			Practical Content:			
General Objective 1.0: Understand the composition and properties of wrought alloys						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Composition and properties of wrought alloys 1.1 Define wrought alloys 1.2 Identify important wrought alloys commonly used in dental prosthetic e.g. gold, stainless steel 1.3 Describe the composition of the various alloys 1.4 State physical properties of each alloy e.g. ductility, modulus of elasticity melting point, etc. 1.5 Describe the effect of cold work on wrought alloys						

General Objective 2.0: Know the principles and techniques employed in soldering and casting and types of fluxes used in dental alloys						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Soldering and casting and type of fluxes used 2.1 Define and classify various types of soldering 2.2 Define fluxes and describe their composition 2.3 Explain the principles used in soldering 2.4 Describe the process of soldering 2.5 Solder wrought and cast metal						
General Objective 3.0: Understand the composition and applications of anti-fluxes commonly used in dental alloys						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Anti-fluxes used in dental alloys 3.1 Define anti-fluxes 3.2 State the use and application						

of anti-fluxes 3.3 Identify the materials commonly used in anti-fluxe and their compositions 3.4 Apply the use of anti-fluxe						
General Objective 4.0: Understand casting procedures and investment materials employed in casting and the use of picking solution						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Casting and use of pickling solution 4.1 State types of investment materials used in casting 4.2 Describe the composition and properties of the materials in 4.1 above 4.3 Carry out casting 4.4 Define and state the composition of pickling solution 4.5 Explain the uses of pickling solution						

4.6 Apply the use of pickling solution						

PROGRAMME: HND DENTAL TECHNOLOGY				
COURSE TITLE: METALLIC PROSTHODONTIC DENTURES II				
COURSE CODE: DTE 423				
DURATION	**Lecture:- 2**	**Tutorial:-** hrs	**Practical:- 3** hrs	**Total:- 75 hrs**
CREDIT UNITS: 3				
GOAL: This course is designed to provide the students with a knowledge of complete design associated with various partial denture classifications and modifications for metallic denture frames				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				
1.0 know Kennedy classification of partial dentures 2.0 understand other classifications of metallic partial denture 3.0 understand modifications of kennedy classification of metallic partial denture				

4.0 know procedures for wax work 5.0 understand the investing procedures 6.0 know the casting techniques 7.0 understand procedures for finishing and polishing of metal cast skeleton denture.

PROGRAMME:HND DENTAL TECHNOLOGY						
COURSE TITLE:		**Course Code: DTE**	**Contact Hours: hrs**			
COURSE SPECIFICATION: Theoretical content			**Practical Content:**			
General Objective 1.0: Know kennedy classification of partial dentures						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Kennedy classification 1.1 Explain Kennedy classification of partial dentures 1.2 Identify classification of 1.1 above on various models 1.3 Describe relationship of types of survey line to each classification 1.4 Identify types of clasps						

suitable for 1.3 above						
General Objective 2.0: understand other classification of metallic partial dentures						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Other classification of metallic partial dentures 2.1 Explain the following classification of metallic partial dentures i. Beckett ii. cummers 2.2 Explain the relationship between the classifications in 2.1 above						
General Objective 3.0: Understand modifications of kennedy classification of metallic partial denture						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Modifications of kennedy classifications 3.1 Describe various modification off kennedy classifications						

3.2 Explain effect of these modifications on the design of partial denture 3.3 Illustrate the design suitable for each modification in 3.1 above						
General Objective 4.0: Know procedures for wax work						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Procedures for wax work 4.1 Describe the procedure of blocking-out unwanted under-cuts 4.2 Identify types of materials used for blocking-out unwanted under cuts 4.3 Explain the techniques and principles of wax-up model for metallic denture 4.4 Identify types of wax suitable for components of the						

metallic dentures 4.5 Explain the principles of spruing for each wax. Pattern/design 4.6 Produce wax for components of the metallic dentures						
General Objective 5.0: Understand the investing procedures						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Investing procedures 5.1 Describe the selection of investment material suitable for various types of metallic cast e.g. i. Silica bonded ii. Phosphate bonded iii. Gypsum bonded 5.2 Explain the various types of investment technique 5.3 Describe all types of expansion and contraction inherent in investment materials 5.4 Explain why the expansion in 5.3 above are important 5.5 Describe the various heating temperatures of the investment prior to castings						

5.6 Explain the term “heating soaking”						
General Objective 6.0: Know the casting techniques						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Casting Techniques 6.1 Identify types of casting machines 6.2 Identify the components of the following casting machines i.Identify types of casting machines i. Centrifugals ii. Induction 6.3 Describe the mechanism of each machines in 6.2 above						
General Objective 7.0: Understand procedures for finishing and polishing of metal cast skeleton dentures						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
Finishing and polishing 7.1 Explain the procedures of recovering the metal cast from different types of investment mould 7.2 Recover the metal casts from investment mould						

7.3 Define pickling and sandblasting of various cast metallic dentures 7.4 Identify the various cutting and trimming machines employed in the trimming processes 7.5 Trim the cast metallic dentures using the machines in 7.4 above 7.6 Identify the various methods used in polishing the cast metallic dentures 7.7 Polish the cast metallic dentures using the various methods in 7.6 above.						

PROGRAMME: HND Dental Technology				
COURSE TITLE: Science of Dental Materials III				
COURSE CODE: DTE 311				
DURATION	**Lecture:- 1 Hr**	**Tutorial:-**	**Practical:- 1 Hr**	**Total:- 2Hrs/Wk (30Hrs/Sem)**
CREDIT UNITS: 2 CU				
GOAL: This course is designed to develop the students understand and application of dental alloys, modelling and investment materials used in dental technology practices				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				

1.0 Know dental alloys and polymer base materials in dental technology practice
2.0 Know the constituents, manipulation and uses of stainless steel in dental technology
3.0 Understand the effect of heat treatment on the properties of dental alloys
4.0 Understand the materials and techniques for soldering and welding
5.0 Understand the use and importance of investment and modelling materials in dental technology

PROGRAMME: HND Dental Technology						
COURSE TITLE: Science of Dental Materials III		**Course Code: DTE 311**		**Contact Hours: 2Hrs/Wk (30Hrs/Sem)**		
COURSE SPECIFICATION: Theoretical content			**Practical Content:**			
General Objective: 1.0 Know dental alloys and polymer base materials in dental technology practice.						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
1.1 Define an alloy 1.2 List the various types of alloys e.g. binary and eutectic 1.3 Describe the components and properties of the alloys in each category in 1.2 above 1.4 Identify commonly used alloys in dental technology practices e.g. gold alloys, chrome-cobalt, etc. 1.5 Explain the choice of alloys used in prosthetic surgery 1.6 Explain the effect of heat treatment on chosen alloys in 1.4 above 1.7 Carry out heat treatment of a name alloy	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

1.8 Define polymer (with example) 1.9 Describe the components and properties of various polymers in 1.8 above 1.10 Identify the commonly used polymer in dental technology practices e.g. polymethyl-metacrylate (acrylic) 1.11 Define composite resins 1.12 Describe the constituents and properties of composite resins 1.13 Define the following i. Condensation ii. Polymerization 1.14 Describe the processes involved in condensation and polymerization in relation to dental technology practice **Stainless Steel in dental technology** 4.1 List constituents of stainless steel e.g i. Iron ii. Carbon iii. Chromium iv. Nickel 4.1 Explain the proportion and function of each						

constituent in 4.1 above. 4.2 Explain the effect of the following treatments on stainless steel. i. Work-hardening ii. Tempering						
General Objective: 2.0 Understand the effect of heat treatment on the properties of dental alloys						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
2.1 Define heat treatment 2.2 Describe the principles of heat treatment 2.3 List alloys that could be heat treated e.g. stainless steel, gold alloys, etc 2.4 Carry out heat treatment of a chosen material 2.5 List the constituents and properties of heat treatment alloys 2.6 List the properties obtainable from the alloys after heat treatment	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

2.7 Demonstrate with diagrams the grain structure of heat treated alloys						
General Objective: 3.0 Understand the materials and techniques for soldering and welding						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
3.1 Define the following: i. Soldering ii. Speed of soldering iii. Welding iv. Fluxes v. Solder vi. Sweating vii. Spot welding 3.2 Describe the mechanism of "Joining" in soldering 3.3 List the types, composition and properties of fluxes 3.4 Describe the various methods of heating 3.5 Explain the principle of soldering 3.6 List the various types of	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

solders, composition and their properties 3.7 List the major hand tools and equipment used in soldering 3.8 Solder two joints together 3.9 Explain the general principles of spot welding 3.10 Identify the tools and equipment used in welding 3.11 Carry out welding exercise using equipment in 3.10 above						
General Objective: 4.0 Understand the use and importance of investment and modelling materials in dental technology						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
4.1 List the constituents and ideal properties of: i. Investment materials ii. Modelling materials 4.2 List various types of investment materials, specifying those for precious and non-precious metals 4.3 List various types of	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

modelling materials 4.4 Define the following: i. Hygroxopic expansion ii. Thermal expansion iii. Setting expansion iv. Inversion change 4.5 State the uses of modelling materials (give examples e.g. plaster of Paris, stone plaster, etc.) 4.6 Explain the industrial calculation of plaster of Paris from the raw base materials 4.7 Describe the chemistry of reaction in 4.6 above 4.8 List the composition of dental plaster and stone plaster 4.9 Explain the factors responsible for the setting of plaster of Paris and stone plaster 4.10 State the difference between plaster of Paris and stone plaster						

4.11 Describe the procedure for measuring the setting time of plaster of Paris 4.12 Identify the equipment used if measuring the setting time of plaster of Paris						

PROGRAMME: HND Dental Technology				
COURSE TITLE: Dental Conservation Prosthetics				
COURSE CODE: DTE 312				
DURATION	**Lecture:- 2 Hrs**	**Tutorial:-**	**Practical:- 3 Hrs**	**Total:- 5Hrs/Wk (75Hrs/Sem)**
CREDIT UNITS: 2 CU				
GOAL: This course is designed to enable the student understand the principles of bridgework and aesthetic crowns				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				

1.0 Understand the definition of terms associated with ceramics and bridgework

2.0 Know the component parts and types of bridge

3.0 Know occlusion form in relation to mastication function and traumatic occlusion

4.0 Understand the shaping of labial, lingual and proximal surfaces in relation to aesthetics, oral hygiene and phonetics

5.0 Know methods of control for gypsum dental refractories, waxes and alloys to give optimum results

6.0 Understand the shaping of occlusion surfaces for inlays and crown to eliminate premature and balancing contacts in eccentric relationship

7.0 Know factors determining selection of alloy types and/or acrylic resin in relation to aesthetics and function

PROGRAMME: HND Dental Technology						
COURSE TITLE: Dental Conservation Prosthetics		**Course Code: DTE 312**		**Contact Hours: 5Hrs/Wk (75Hrs/Sem)**		
COURSE SPECIFICATION: Theoretical content				**Practical Content:**		
General Objective: 1.0 Understand the definition of terms associated with ceramics and bridgework						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
1.1 Define and explain the following: i. Crown (Metallic and nonmetallic) e.g. full veneer partial veneer, combination, jacket, post-retained. Temporary phyroplast veneer etc. ii. Bridges iii. Classes of inlay e.g. Class I, II, III, IV and V iv. Onlays v. Post and core vi. Occlusal rests vii. Pintedge viii. Pontic ix. Abutment x. Cervical margin, gingival margin xi. Dies and master casts; stone dies, amalgam ores electroformed	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

copper dies xii. Copper bonded and tube impressions xiii. Domel pins xiv. Rubber base impressions xv. Porcelain, porcelain fused to metal restorations xvi. Crown contour xvii. Dental cements xviii. Precious and non-precious metals xix. Gold finess xx. Metal casting and related procedure xxi. Silver plating xxii. Burnishing						

General Objective: 2.0 Know the component parts and types of bridge						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
2.1 Define dental bridge 2.2 State indication for construction of dental bridges 2.3 Enumerate the component parts of a dental bridge 2.4 Explain the importance and functions of each	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

component part of dental bridge 2.5 Identify the types of dental bridges available in dental technology practices 2.6 Identify materials commonly used in the construction of dental bridges e.g. porcelain, precious alloys, etc. 2.7 Describe the procedures employed in the fabrication of bridges taking cognizance of common precautions that normally result, into constructional defects 2.8 Construct dental bridges using materials listed in 2.6 above 2.9 Identify common defects that could arise in the construction of bridges and specify stages						
General Objective: 3.0 Know occlusion form in relation to mastication function and traumatic occlusion						
Specific Learning Objectives:	**Teachers**	**Learning Resources**	**Specific**	**Teachers**	**Learning**	**Evaluation**

	Activities		**Learning Objectives:**	**Activities**	**Resources**	
	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination
General Objective: 4.0 Understand the shaping of labial, lingual and proximal surfaces in relation to aesthetics, oral hygiene and phonetics						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
4.1 Define and explain the following terms: i. Labial Surface ii. Lingual surface iii. Proximal surface iv. Aesthetics v. Phonetics 4.2 Describe the process of using carving wax to shaping the following surfaces: i. Label ii. Lingual iii. Proximal 4.3 Carryout the shaping of	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

surfaces in 4.2 above 4.4 Identify the instruments used for waxing and carring 4.5 Shape the surface in 4.2 above to reflect aesthetics hygiene and phonetics						

General Objective: 5.0 Know methods of control for gypsum dental refractories, waxes and alloys to give optimum results

Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
1.1 State the constituents and properties of the following: i. Gypsum dental refractories (gypsum bonded investment) ii. Waxes iii. Dental alloys 1.2 Explain the significant chemical reactions in the materials listed in 5.1 above 1.3 State common factors affecting the setting time of gypsum bonded investments e.g. water-pounder ratio, spatulation, temperature, etc. 1.4 Control the various rates of expansion in gypsum bonded materials using the factors listed in 5.3 above 1.5 State common factors affecting	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

the expansion and setting time of curving wax e.g. temperature 1.6 Enumerate the factors affecting the properties of alloys used in the construction of crown and bridges 1.7 Manipulate the factors in 5.6 above to produce well-fitting appliances (bridges and crown)						

General Objective: 6.0 Understand the shaping of occlusion surfaces for inlays and crown to eliminate premature and balancing contacts in eccentric relationship

Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
6.1 Define and explain the following: i. Inlays (all classes) ii. Crown iii. Premature contact iv. Balancing contact v. Eccentric relationship 6.2 List and explain the factors affecting the shaping of inlays and crown in relation to the following: i. Premature contact ii. Balancing contact	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

iii. Eccentric relationship 6.3 Explain the steps taken in shaping 6.4 Shape crown and inlays to eliminate premature and balancing contacts in eccentric relationship						
General Objective: 7.0 Know factors determining selection of alloy types and/or acrylic resin in relation to aesthetics and function						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
7.1 Define and explain the following: 7.2 Identify common types of alloys used in the following: 7.3 Enumerate factors that determine the selection of alloys and acrylic resin in the construction of crown and inlays 7.4 Select the appropriate alloys and acrylic resin for the construction of crowns and inlays and crowns 7.5 Construct inlays and crown using selected alloys and acrylic resin to	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

reflect function and aesthetics						

PROGRAMME: HND Dental Technology				
COURSE TITLE: Metallurgy in Dental Technology				
COURSE CODE: DTE 313				
DURATION	**Lecture:- 1 Hr**	**Tutorial:-**	**Practical:- 1 Hr**	**Total:- 2Hrs/Wk (30Hrs/Sem)**
CREDIT UNITS: 2 CU				
GOAL: This course is designed to acquaint the students with the history, science, composition and the general behaviors of the types of metals and alloys used in dental technology practices				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				

1.0 Know the range of metals in the periodic table used in dentistry
2.0 Understand the science of metals and alloys
3.0 Understand the factors the influence choice of precious metals and other types of metals for dental restoration
4.0 Understand the technology of heat treatment and other manipulatory treatments of metal for dental purposes

PROGRAMME: HND Dental Technology						
COURSE TITLE: Metallurgy in Dental Technology		**Course Code: DTE 313**		**Contact Hours: 2Hrs/Wk (30Hrs/Sem)**		
COURSE SPECIFICATION: Theoretical content			**Practical Content:**			
General Objective: 1.0 Know the range of metals in the periodic table used in dentistry						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
1.1 List all the metals used in dental technology and their melting points and densities 1.2 Describe the extraction from ore, important metals such as gold, copper, platinum	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment

and chromium cobalt 1.3 Define density, specific gravity and melting point 1.4 State the effects of the factors in 1.3 above on metals during manipulation						Examination
General Objective: 2.0 Understand the science of metals and alloys						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
2.1 Define metal and alloy 2.2 Demonstrate the concept of adhesion, cohesion and inter-atomic forces in metallic crystals, changes of stress and strain 2.3 Define and explain primary inter-atomic bonds e.g. primary bonding forces and secondary bonding forces or Van der wal forces	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination
General Objective: 3.0 Understand the factors the influence choice of precious metals and other types of metals for dental restoration						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
3.1 Explain chemical and physical reactions of metals used in dental technology e.g. galramic shock	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment

3.2 Define and explain the following: i. Thermal energy ii. Crystal structure 3.3 Describe the crystal structure of alloys of gold, cooper, silver, palladium, platinum, stainless steel and cobalt-chromium 3.4 Demonstrate and explain the following: i. Elasticity ii. Elastic limit iii. Proportional limits iv. Modulus of elasticity v. Resistance vi. Flexibility vii. Impact force viii. Permanent deformation stress 3.5 Define: i. Impact strength ii. Tensile strength iii. Ductility						Examination

iv. Malleability v. Creep vi. Flow vii. Toughness viii. Brittleness ix. Hardness						
General Objective: 4.0 Understand the technology of heat treatment and other manipulatory treatments of metal for dental purposes						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
4.1 Define and demonstrate heat treatment of metals e.g. annealing, heating soaking, etc. 4.2 Demonstrate and describe Tensile stress and strain, compressive stress and strain, shear stress and strain, and wetting surface energy 4.3 Use graphs to illustrate the following: i. Tensile stress and strain ii. Sheer stress and strain	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

PROGRAMME: HND Dental Technology				
COURSE TITLE: Complete Dental Prosthetics II				
COURSE CODE: DTE 314				
DURATION	**Lecture:- 2 Hrs**	**Tutorial:-**	**Practical:- 2 Hrs**	**Total:- 4Hrs/Wk (60Hrs/Sem)**
CREDIT UNITS: 2 CU				
GOAL: This course is designed to provide the students with the understanding of advanced principles and techniques involved in the setting and production of complete dentures				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				
1.0 Understand the principles of occlusion, retention and stability in the construction of complete denture in classes I jaw relationships 2.0 Understand the indications for and immediate denture restorations 3.0 Understand the principles of design and methods of construction for complete dentures 4.0 Understand the clinical factors that determine the choice of immediate restorations and the effect of operative techniques on the design of the final prosthesis				

PROGRAMME: HND Dental Technology		
COURSE TITLE: Complete Dental Prosthetics II	**Course Code: DTE 314**	**Contact Hours: 4Hrs/Wk (60Hrs/Sem)**
COURSE SPECIFICATION: Theoretical content	**Practical Content:**	
General Objective: 1.0 Understand the principles of occlusion, retention and stability in the construction of complete denture in classes I relationships		

Specific Learning Objectives:	Teachers Activities	Learning Resources	Specific Learning Objectives:	Teachers Activities	Learning Resources	Evaluation
1.1 Define and explain the following: i. Occlusion ii. Retention iii. Stability iv. Class II jaw relationship v. Class III jaw relationship vi. Compare dentures 1.2 Explain tooth positions in classes II and III jaw relationships 1.3 Explain associated skeletal structures in classes II and III 1.4 Describe the procedure for positioning teeth in classes II and III occlusal relationship 1.5 Demonstration the principles of articulation and balanced occlusion in both jaw relationships 1.6 Define and explain the following: i. Curve of spee ii. Curve of monsoon iii. Cohesion	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

iv. Adhesion v. Festooning vi. Contouring 1.7 Explain the effect of i-iv above on the function and stability of complete dentures 1.8 Explain the effect of festooning and contouring on aesthetics of complete denture 1.9 Demonstrate the effects of 1.6 above on the construction of complete dentures 3.1 Define occlusion 3.2 State factors responsible for mal-occlusion 3.3 Apply precautionary measures to prevent mal-occlusion 3.4 Explain the various types of occlusion e.g. centric, eccentric, etc. 3.5 Identify the various types						

of occlusion 3.6 Define mastication 3.7 Explain the relationship between mastication and occlusion 3.8 Demonstrate the relationship between mastication and occlusion						
General Objective: 2.0 Understand the indications for ant the limitations of immediate denture restorations						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
2.1 Define and explain a complete immediate denture 2.2 State indications and contra-indications for the construction of complete immediate dentures 2.3 State the advantages of complete immediate denture	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination
General Objective: 3.0 Understand the principles of design and methods of construction for complete dentures						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
3.1 Prepare complete denture applying the principles involved	Lecture Explain the	Textbooks, Charts and Forms, Reading materials.				Quiz Tests

3.2 Identify the various types of complete immediate dentures e.g. socketed and flanged with alveolectomy etc. 3.3 State the role of alveoplastry in complete immediate denture 3.4 Demonstrate the principle and techniques of alveoplastry on a given patient's model 3.5 Construct various types of complete immediate denture	concepts covered					Assignment Examination
General Objective: 4.0 Understand the clinical factors that determine the choice of immediate restorations and the effect of operative techniques on the design of the final prosthesis						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
4.1 State the clinical factors or indication that determine the choice of immediate restorations e.g. trauma pathology etc. 4.2 Explain the principles involved in the recording	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

of Axes and gingival margins of teeth for extraction 4.3 Remove standing teeth, leaving the gingival margin marks intact 4.4 Explain reasons for depth variation of the sockets i.e. lebialy and palatally						

PROGRAMME: HND Dental Technology				
COURSE TITLE: Dental Prosthetics Technology III				
COURSE CODE: DTE 315				
DURATION	**Lecture:- 1 Hr**	**Tutorial:-**	**Practical:- 2 Hrs**	**Total:- 3Hrs/Wk (45Hrs/Sem)**
CREDIT UNITS: 2 CU				
GOAL: This course is designed to enable the students acquire the techniques for the design and construction of full and partial dentures				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				
1.0 Understand the mechanical principles of semi-adjustable articulator, the requirement for facebow and centri/eccentric occlusal records 2.0 Understand the principles and techniques for mounting casts on fully adjustable articulators using facebow recordings 3.0 Know the reasons for the provision of and procedures for constructing duplicate dentures 4.0 Understand the clinical factors which determine the use of resilient liners in complete and partial dentures				

PROGRAMME: HND Dental Technology		
COURSE TITLE: Dental Prosthetics Technology III	**Course Code: DTE 315**	**Contact Hours: 3Hrs/Wk (45Hrs/Sem)**
COURSE SPECIFICATION: Theoretical content		**Practical Content:**
General Objective: 1.0 Understand the mechanical principles of semi-adjustable articulator, the requirement for facebow and centri/eccentric occlusal records		

Specific Learning Objectives:	Teachers Activities	Learning Resources	Specific Learning Objectives:	Teachers Activities	Learning Resources	Evaluation
1.1 Define articulators 1.2 Identify various types of articulators e.g. simple hinge articulator, semi-adjustable articulator and anatomical articulator 1.3 Describe the various components of a semi-adjustable articulators and its functions 1.4 Draw and label a semi-adjustable articulator 1.5 Explain the working principles of a semi-adjustable articulator 1.6 Mount upper and lower cast using a semi-adjustable articulator 1.7 Explain the term facebow and its importance 1.8 Explain the indications for the use of face bow 1.9 State the requirement necessary for the recording of centric and eccentric occlusions	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

General Objective: 2.0 Understand the principles and techniques for mounting casts on fully adjustable articulators using facebow recordings						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
2.1 Describe the use of fully adjustable articulator 2.2 Identify the component parts of a fully adjustable articulator and their function 2.3 State the importance of facebow while mounting on fully adjustable articulator 2.4 Construct upper and lower record rims in preparation for clinical recordings 2.5 Mount upper and lower records rims on a full adjustbale articulator taking cognizance of the vertical and horizontal inclinations for the condylar mechanism using facebow	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination
General Objective: 3.0 Know the reasons for the provision of and procedures for constructing duplicate dentures						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning**	**Teachers Activities**	**Learning Resources**	**Evaluation**

			Objectives:			
3.1 Define duplicate dentures 3.2 Enumerate indications for the duplication of dentures 3.3 Explain the advantages and limitations of duplicate dentures 3.4 Identify the materials needed for the reconstruction of a duplicate denture 3.5 Describe the principles and procedures for constructing duplicate dentures 3.6 Reconstruct a given existing complete upper and lower dentures	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination
General Objective: 4.0 Understand the clinical factors which determine the use of resilient liners in complete and partial dentures						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
4.1 Define and give examples of resilient liners 4.2 Enumerate the composition and ideal	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment

properties of resilient liners 4.3 State clinical reasons for the use of resilient liners 4.4 Describe the principles of incorporation of resilient liners into an existing denture 4.5 Incorporate resilient liners into existing dentures						Examination

PROGRAMME: HND Dental Technology (Moved to dental Anatomy)				
COURSE TITLE: Functional Anatomy of Mastication, Swallowing and Speech				
COURSE CODE: DTE 316				
DURATION	**Lecture:- 1 Hr**	**Tutorial:-**	**Practical:-**	**Total:- 1Hr/Wk (15Hrs/Sem)**
CREDIT UNITS: 1 CU				
GOAL: This course is designed to enable the students understand the influence of muscles in the design of prosthesis and its retention without impairing speech and mastication				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				
1.0 Understand the role of cheek muscles and the surrounding tissues in the retention of prosthesis in the oral cavity 2.0 Know how speech and mastication can be improved				

PROGRAMME: HND Dental Technology						
COURSE TITLE: Functional Anatomy of Mastication, Swallowing and Speech		**Course Code: DTE 316**		**Contact Hours: 1Hr/Wk (15Hrs/Sem)**		
COURSE SPECIFICATION: Theoretical content			**Practical Content:**			
General Objective: 1.0 Understand the role of cheek muscles and the surrounding tissues in the retention of prosthesis in the oral cavity						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
1.1 Define and explain the following: 1.2 List the muscles of mastication e.g. buccinators, masseter, etc. 1.3 Explain the functions and importance of the muscles listed in 1.2 above prosthesis retention 1.4 List the muscles of facial expression e.g. Modiolus, orbicularis oris etc. 1.5 Explain the functions and importance of muscles listed in 1.4 above in prosthesis retention 1.6 Identify the muscles listed in 1.2 and 1.4 above using	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

models, slides and chart flips						

General Objective: 2.0 Know how speech and mastication can be improved						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
2.1 List factors considered in designing and constructing prosthesis which aid speech and mastication 2.2 Explain the effects of the factors in 1.2 above on design and construction of prosthesis	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

PROGRAMME: HND Dental Technology
COURSE TITLE: Principles of Denture Repairs, Relining, Rebasing and Addition

COURSE CODE: DTE 317				
DURATION	**Lecture:- 2 Hrs**	**Tutorial:-**	**Practical:- 2 Hrs**	**Total:- 4Hrs/Wk (60Hrs/Sem)**
CREDIT UNITS: 2 CU				
GOAL: This course is designed to acquaint students with the principles and procedures of denture repair, refining, rebasing and addition of prosthesis				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				
1.0 Understand the definitions and importance of the terms involved in repair, refining, rebasing and addition of prosthesis 2.0 Understand the principles and procedures employed while undertaking repairs, relining, rebasing or additions of prosthesis				

PROGRAMME: HND Dental Technology						
COURSE TITLE: Principles of Denture Repairs, Relining, Rebasing and Addition		**Course Code: DTE 317**		**Contact Hours: 4Hr/Wk (60Hrs/Sem)**		
COURSE SPECIFICATION: Theoretical content			**Practical Content:**			
General Objective: 1.0 Know deciduous and permanent dentation						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning**	**Teachers Activities**	**Learning Resources**	**Evaluation**

			Objectives:			
1.1 Define and explain the following: i. Repair ii. Relining iii. Rebasing iv. Addition 1.2 State the reason for each of the procedures in 1.1 above 1.3 List the importance of the procedures in 1.1 above 1.4 State the limitations of the procedures in 1.1 above	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination
General Objective: 2.0 Understand the morphology of the teeth						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
2.1 Explain the principles involved in the following: i. Repairs ii. Relining iii. Rebasing iv. Addition of Prosthesis 2.2 Describe the process involved in undertaking the repair of broken dental prosthesis 2.3 Identify the materials required in the repair of	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

broken dental prosthesis 2.4 Repair broken complete upper denture 2.5 Describe the process involved in relining an ill-fitting and sensitive dental alliance 2.6 Describe the constitutions and properties of any chosen tissue soft-liner to be employed in the relining process 2.7 Reline complete lower denture 2.8 Describe the process involved in undertaking rebasing of or loose dental prosthesis 2.9 Rebase complete lower denture 2.10 Describe the process involved in the undertaking addition of a missing component of a dental prosthesis 2.11 Carry out the addition for a partial denture with a missing component						

2.12 Carry out relining, rebasing, and repair involving impression taking						

PROGRAMME: HND Dental Technology				
COURSE TITLE: Polymer Chemistry				
COURSE CODE: PLT 211				
DURATION	**Lecture:- 1 Hr**	**Tutorial:-**	**Practical:- 2 Hrs**	**Total:- 3Hrs/Wk (45Hrs/Sem)**
CREDIT UNITS: 2 CU				
GOAL: This course is designed to provide the students with the basic knowledge of Chemistry of Polymers				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				
1.0 Understand the basic principles of polymer science 2.0 Understand the Chemistry of Polymer Synthesis 3.0 Understand the technique for the commercial production of polymers				

PROGRAMME: HND Dental Technology						
COURSE TITLE: Polymer Chemistry		**Course Code: PLT 211**		**Contact Hours: 3Hrs/Wk (45Hrs/Sem)**		
COURSE SPECIFICATION: Theoretical content			**Practical Content:**			
General Objective: 1.0 Understand the basic principles of polymer science						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
1.1 Define Polymers 1.2 Classify Polymers 1.3 List the general properties of Polymers 1.4 Describe the physical and molecular structure of polymers 1.5 Carryout the following simple test to identify a polymer 1.6 Explain average molar mass and molar mass distribution 1.7 Determine average molar mass of polymer by the following methods:	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

viscometer, osmometer, boiling point elevation and end group analysis 1.8 Explain the importance of molar mass distribution in selecting a polymer material for a particular application 1.9 Explain the terms: Glass transit/Temperature (Tg) and melting temperature 1.10 List the factors affecting Tg and Tm 1.11 Measure the Tg of Polymers by volume expansion coefficient						
General Objective: 2.0 Understand the Chemistry of Polymer Synthesis						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
2.1 Define polymerization, functionality and degree of polymerization 2.2 Classify polymerization process 2.3 Outline the mechanism of chain polymerization (free radical) 2.4 Outline the mechanism of step-growth polymerization	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

2.5 Compare chain polymerization and step-growth polymerization 2.6 Define copolymerization 2.7 Classify copolymers into: Black, random, and graft copolymers						
General Objective: 3.0 Understand the technique for the commercial production of polymers						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
3.1 Identify and describe the different techniques of producing polymers commercially 3.2 Outline the process of bulk polymerization 3.3 List the advantages and disadvantage of bulk polymerization 3.4 Outline the process of suspension polymerization 3.5 List the advantages and disadvantages of suspension polymerization 3.6 Outline the process of solution polymerization	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

3.7 List the advantages and disadvantages of solution polymerization 3.8 Outline the process of emulsion polymerization 3.9 List the advantages and disadvantages of emulsion polymerization 3.10 Prepare different polymers using the techniques listed in 3.1 above						

PROGRAMME: HND Dental Technology				
COURSE TITLE: Primary Oral Health Care				
COURSE CODE: DTH 313				
DURATION	**Lecture:- 1 Hr**	**Tutorial:-**	**Practical:- 1 Hr**	**Total:- 2Hrs/Wk (30Hrs/Sem)**
CREDIT UNITS: 2 CU				
GOAL: This course is designed to provide the students with the knowledge of the common oral diseases and their management in accordance with the Primary Oral Health Care standing orders				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				

1.0 Know healthy oral tissues, diagnosis and aetiology of common oral diseases
2.0 Know the general preventive and control measures of common dental diseases
3.0 Know the epidemiology of dental diseases in a community

PROGRAMME: HND Dental Technology						
COURSE TITLE: Primary Oral Health Care		**Course Code: DTH 313**		**Contact Hours: 2Hrs/Wk (30Hrs/Sem)**		
COURSE SPECIFICATION: Theoretical content			**Practical Content:**			
General Objective: 1.0 Know healthy oral tissues, diagnosis and aetiology of common oral diseases						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
1.1 Define oral health 1.2 Describe the anatomy of the mouth in relation to teeth and gingivae 1.3 Explain the aetiology of periodontal diseases and dental caries	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

1.4 Identify the features of inflamed gingivae 1.5 Describe the composition of dental plague and calculus 1.6 Identify dental plague, calculus and caries in the oral cavity 1.7 Examine school children, personnel and other members of a community for oral diseases 1.8 Identify and diagnose common oral diseases as stated in the primary oral health care standing orders 1.9 Treat oral health problem identified in 1.8 above 1.10 Refer patients to the next management level for further management if necessary						

General Objective: 2.0 Know the general preventive and control measures of common dental diseases						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
2.1 Enumerate the various preventive and control measures of common dental diseases 2.2 Explain the preventive and control measures in 2.1	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

above 2.3 Design an oral health education programme for the prevention and control of oral dental diseases in a community						
General Objective: 3.0 Know the epidemiology of dental diseases in a community						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
3.1 Define epidemiology 3.2 Define the common terminologies used in epidemiology e.g. incidence, prevalence, endemic, epidemic, pandemic, etc. 3.3 Explain the epidemiological factors responsible for the prevention of: 3.4 Gather epidemiological data from a community 3.5 Diagnose and treat identified dental diseases in 3.3 above in a rural community 3.6 Design an oral education programme for the	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

prevention of the disease in 3.4 above in a rural community						

PROGRAMME: HND Dental Technology				
COURSE TITLE: Partial Dental Prosthodontics I				
COURSE CODE: DTE 321				
DURATION	**Lecture:- 1 Hr**	**Tutorial:-**	**Practical:- 3 Hrs**	**Total:- 4Hrs/Wk (60Hrs/Sem)**
CREDIT UNITS: 2 CU				
GOAL: This course is designed to acquaint students with the knowledge of tooth-borne partial denture design, construction and applications				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				

1.0 Understand the principles of tooth-borne partial denture design and construction
2.0 Understand the principles of "lost wax" process in metal casting and its dental applications
3.0 Understand the principles of dental application of metal melting and finishing systems
4.0 Understand the principles and process of soldering dental alloys

PROGRAMME: HND Dental Technology						
COURSE TITLE: Partial Dental Prosthetics		**Course Code: DTE 321**		**Contact Hours: 4Hrs/Wk (60Hrs/Sem)**		
COURSE SPECIFICATION: Theoretical content				**Practical Content:**		
General Objective: 1.0 Understand the principles of tooth-borne partial denture design and construction						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
1.1 Define and explain tooth-borne partial dentures 1.2 Explain the importance and function of tooth-borne partial dentures 1.3 List the various classes of tooth-borne partial dentures e.g. Kennedy and Beckett's classifications 1.4 Describe the component parts of tooth-borne partial dentures and their functions 1.5 Explain the advantages and limitation of tooth-borne partial denture 1.6 Describe the principles of tooth-borne partial denture 1.7 Describe the constituents and properties of the materials of the component parts of tooth-borne partial dentures 1.8 Demonstrate the designs of tooth-borne partial dentures	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

on given models using the principles described in 1.6 above (Demonstration should cover various classes) 1.9 Describe the process of the construction of various classes of tooth-borne partial dentures 1.10 Construct various classes of tooth-borne partial						

General Objective: 2.0 Understand the principles of "lost wax" process in metal casting and its dental applications						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
2.1 Define the term "Lost Wax" process 2.2 Explain the importance of "Lost Wax" process in metal casting 2.3 List the various types of waxes used in metal casting process 2.4 Describe the composition and properties of the metal casting process 2.5 List the various types of investment materials used in	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

metal casting process 2.6 Describe the composition and properties of investment materials used in metal casting process 2.7 Describe the principles of "Lost Wax" process in metal casting 2.8 Prepare WAC pattern of tooth-borne partial dentures 2.9 Prepare molds of WAX pattern of tooth-borne partial dentures in preparation for metal casting 2.10 Cast metal for tooth-borne partial dentures						
General Objective: 3.0 Understand the principles of dental application of metal melting and finishing systems						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
3.1 Define or explain the following terms: i. Wax Pattern ii. Investing iii. Sprucing iv. Burnout Temperature	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

v. Burnout Time vi. Wax-pattern coating vii. Metal melting viii. Casting ix. Finishing in relation to metal works 3.2 Describe the principles of metal melting in relation to dental technology practice 3.3 Melt metal for the production of partial dental skeletal plate 3.4 Carry out the finishing process of the produced partial denture skeletal plate in 3.3 above.						
General Objective: 4.0 Understand the principles and process of soldering dental alloys						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
4.1 Define and explain the following terms: 4.2 Describe the mechanism of "joining" in soldering 4.3 List the types, composition and properties of	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

fluxes 4.4 Describe various methods of soldering 4.5 Describe various methods of heating 4.7 List the types, composition and properties of solders 4.8 Identify the major hand tools and equipment used in soldering 4.9 Describe the functions of the various parts of the equipment in 4.8 above 4.10 Solder dental alloys						

PROGRAMME: HND Dental Technology				
COURSE TITLE: Orthodontic Technology I				
COURSE CODE: DTE 322				
DURATION	**Lecture:- 1 Hr**	**Tutorial:-**	**Practical:- 3 Hrs**	**Total:- 4Hrs/Wk (60Hrs/Sem)**
CREDIT UNITS: 2 CU				
GOAL: This course is designed to provide students with basic knowledge of orthodontics				
GENERAL OBJECTIVES: On completion of the course, the student should be able to:				
1.0 Understand the history and essentials of orthodontics 2.0 Know the musculature, anatomical features and bone growth regions associated with myofunctional appliance therapy 3.0 Know the principles of screw, spring and myofunctional appliances 4.0 Understand the selection or removable orthodontic appliances and types of anchorage used in orthodontics				

PROGRAMME: HND Dental Technology		
COURSE TITLE: Orthodontic Technology I	**Course Code: DTE 322**	**Contact Hours: 4Hrs/Wk (60Hrs/Sem)**
COURSE SPECIFICATION: Theoretical content		**Practical Content:**

General Objective: 1.0 Understand the history and essentials of orthodontics						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
1.1 Define Orthodontics 1.2 Narrate the relevance of orthodontic treatment in contemporary dental practice 1.3 Outline the history of Orthodontics 1.4 List the goals of Orthodontic treatment 1.5 Classify Orthodontic appliances 1.6 Define normal occlusion 1.7 Define mal-occlusion 1.8 Classify mal-occlusion 1.9 Produce Orthodontic models to reflect various classes of mal-occlusion 1.10 Define pressure in relation to Orthodontics 1.11 Explain the effects of pressure from Orthodontics appliances e.g. Orthodontics appliance 1.12 Describe the aetiology of bones in relation to oral appliances e.g. Orthodontics appliances 1.13 Define Orthodontic model	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

1.14 State the significance of models in Orthodontic treatment 1.15 Describe Orthodontics model making in its trimming 1.16 Produce and trim Orthodontics models						

General Objective: 2.0 Know the musculature, anatomical features and bone growth regions associated with myofunctional appliance therapy						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
2.1 Define myofunctional appliances 2.2 List myofunctional appliance and their uses 2.3 List the muscles of mastication 2.4 List the muscles of facial expression 2.5 Identify the muscles of mastication and facial expressions in relation to myofunctional appliances 2.6 Describe the aetiology of bone growth in relation to myofunctional appliances in	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

the following areas: i. The maxilla (palate) ii. The mandibles 2.7 Describe the principles and procedures for the construction of myofunctional appliances 2.8 Construct myofunctional appliances						
General Objective: 3.0 Know the principles of screw, spring and myofunctional appliances						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
3.1 Define screw and spring in relationship to orthodontic appliances 3.2 List various types of screws 3.3 List the various types of springs 3.4 Identify various screws and spring in orthodontic treatment 3.5 Explain reason why expansion screws are used in	Lecture Explain the concepts covered	Textbooks, Charts and Forms, Reading materials.				Quiz Tests Assignment Examination

orthodontic treatment 3.6 Identify various expansion screw appliances 3.7 Identify various spring incorporated appliances in the treatment of orthodontic patients 3.8 Compare and contrast the effects of screw and spring appliances in orthodontics 3.9 Describe the principles and procedures of constructing spring and screw appliances 3.10 Construct various types of screw expansion appliances 3.11 Construct removable spring appliance						
General Objective: 4.0 Understand the selection or removable orthodontic appliances and types of anchorage used in orthodontics						
Specific Learning Objectives:	**Teachers Activities**	**Learning Resources**	**Specific Learning Objectives:**	**Teachers Activities**	**Learning Resources**	**Evaluation**
4.1 Define anchorage in relation to orthodontics 4.2 Identify various types of	Lecture Explain the	Textbooks, Charts and Forms, Reading materials.				Quiz

anchorage e.g. simples, reciprocal, re-enforced, intermaxillary, etc 4.3 Explain the effects of anchorage on orthodontic appliances 4.4 Describe the principles of anchorage in the construction of orthodontic appliances 4.5 Demonstrate anchorage 4.6 Construct five different appliances exhibiting anchorage 4.7 List the requirement for anchorage 4.8 Examine various orthodontics models to determine treatment 4.9 Select models to determine orthodontic treatment	concepts covered					Tests Assignment Examination

LIST OF MINIMUM EQUIPMENT/TOOLS REQUIRED FOR DENTAL TECHNOLOGY PROGRAMMES (ND/HND)

(1) EQUIPMENT/TOOLS FOR THE BASIC SCIENCE LABORATORIES

I. General Biology Laboratory

II. General chemistry Laboratory

III. Physics Laboratory

IV. Photography and Audio visual studio

V. Wood and metal workshop

(2) EQUIPMENT/TOOLS FOR DENTAL TECHNOLOGY PROFESSIONAL LABORATORIES

I. **PROSTHETIC ROOM**

S/No.	Description	Quantity Required
1	Laboratory with fully equipped work benches with refractory top (1.5m x 0.8m) per student titled with following	
a.	Water tap and sink	
b.	Gas, Air, and Electric installation	
c.	Instrument Cabinet and two drawers	20
d.	Illumination Head lamp	20
e.	Single Vacuum Unit	20
f.	Pack Replacement Unit	20
g.	Laboratory Revolving Chair	20
h.	Bunsen Burner	20

i.	Standard Trimming Machine	20

II. **PLASTER ROOM**

S/No.	Description	Quantity Required
2.	Plaster room and titled desk or concrete slab should have a floor area of about 2.00 square metre per student. Other fittings in the plaster room room are:	
a.	Adequate water sinks titled to plaster room work benches	Depends on the size of laboratory
b.	Model trimmers	4
c.	Bench Presses	4
d.	Vacuum investor for crown and Bridge	2
e.	Vibrators	3
f.	Sell of flask (acrylic, Maxillo Facial and C and B)	Assorted
g.	Rubber Mallets	2
h.	Plaster shears and saw	10
i.	Turbine chisels-for devesting and cutting models	10
j.	Plaster/Stone Dispensers	4
k.	Sand Blasting Machine	4

l.	Plaster shears and saw	4

iii. PROSTHETIC ROOM

S/No.	Description	Quantity Required
3.		
a.	Hydraulic press	4
b.	Polymerising unit	3
c.	Automatic wax Boil-out unit	3
d.	Set of Acrylic Mixing Vessels and Spatulas	6
e.	pressure forming unit with compressor	2
f.	Refrigerator	2
g.	Clamps (Single and Double)	10 each
h.	ultrasonic Cleaners	5

iv.

CASTING ROOM

S/No.	Description	Quantity Required
4.		
a.	A set of properly isolated osey-acetyline gas cylinders	A set of 2
b.	A set of Gas Blow Torch (Assorted)	Assorted
c.	Pre-Heating furnace	2
d.	'Solbring' Casting Machine	2
e.	Induction Casting Machine	2
f.	Bench top casting machine for flame melting (Centrifugal)	2
g.	Dipping Bath (Bees as Unit)	2
h.	Gas Chamber/Cupboard	2
i.	Gume Extractor	3
j.	Set of casting rings Nos $1^x - 9^x$	Assorted
	crucible formers, ceramic crucible	Assorted
	Tongs and asbestors Gloves	4 each
k.	Storage cabinets	Depends on size of laboratory
l.	Refractory benches	

v. **POLISHING ROOM**

S/No.	Description	Quantity Required
5.		
a.	Polishing unit complete with dust extractor and lightning unit	3
b.	High speed Grinder	3
c.	Electrolytic polishing/plating unit	2
d.	Lather polishing Brushes (Assorted) and mops	Assorted
e.	Storage cabinet	Depends on Size of Laboratory
f.	Ultrasonic Cleaning Machine	2

SUNDRY ROOM

S/No.	Description	Quantity Required
6.		
a.	Spot welding and soldering unit	2
b.	Dental Surveyors	3
c.	Articulators – simple hinge, Fixed condylar and anatomical.	4 each
d.	Orthodontic kits, orthodontic wire, cabinet soldering jigs and platforms.	2 each

e. crown and Brid

LIST OF PARTICIPANTS.

S/N	NAME	ADDRESS
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9.	Helen Oduntan	National Board for Technical Education, Kaduna.