

Appendix VIII

Course Descriptions for Dental Technology

Course Description

CHE 105: General Chemistry for Healthcare Professions

3 Credits

This course deals with the study of general chemical principles, including stoichiometry, atomic structure, chemical bonds and molecular geometry, chemical reactions and equilibria, thermochemistry, gases, solutions, with emphasis on the practical aspects of chemistry in numerous healthcare-related situations. Course Prerequisites or Co-requisites: None.

UNI 101: First-Year University Experience

3 Credits

This course acclimates and prepares students for university life. It introduces students to academic practices such as critical reading and thinking, study and research skills, information literacy, cultural diversity, and collaborative learning within an “American-Style” liberal arts educational environment. Course Prerequisite or Corequisite: None

MAT 101 College Algebra

3 Credits

Introduces the idea of multiple representations of linear and non-linear functions. Includes mathematical concepts for understanding rational numbers, various expressions, analyzing and solving linear equations & inequalities, data analysis, probability, statistics, and polynomials. Has hands-on material providing the student with problem-solving skills where algebra concepts are applied. Course Prerequisite or Corequisite: None

CSC 101: Introduction to Computer Science

3 Credits

This course covers the fundamentals of computers and computer nomenclature, particularly with respect to personal computer hardware and software used in today's business environment. Students will survey and use business applications programs utilizing pre-written programs that include word processing, spreadsheets, databases, presentation graphics, and web browsers. Students completing the course will have a solid understanding of computer concepts, how to use computers in today's business world, and how to access information on the World Wide Web. Course Prerequisite or Corequisite: None

BIO 101: Introductory Biology

3 Credits

This introductory course covers basic concepts in biology. It includes an introduction to the basis of life, structure and function of cells and systems, forms and functions of plants and animals, as well as genetics, evolution, and ecology. Course Prerequisite or Corequisite: None.

ENL 101: Expository Writing

3 Credits

This course enables students to practice writing in several contexts and forms (from personal narrative to inquiry and argument). They will develop increasingly complex essays incorporating the ideas and language of other writers in placing their voice within academic or public debates. Course Prerequisite or Corequisite: None

BDS 105 Medical Physics

3 Credits

This course provides introductory physics for health science professionals. The course material includes topics related to mechanics, waves, fluids and thermodynamics, vibrations and waves, and atomic and nuclear physics. The course aims as well to provide a basic understanding of physical processes and techniques needed for the further understanding of complex concepts in advanced health sciences courses. Course Prerequisite: MAT 101.

BIO 217 Human Anatomy and Physiology

3 Credits

This course introduces students to the anatomy and physiology of the human body with an emphasis on the skeletal, muscular, cardiovascular, renal, immune, nervous, endocrine, gastrointestinal, respiratory, and reproductive systems. A comprehensive knowledge of homeostatic regulation in the body's functions and a discussion of imbalances to homeostasis will be covered. Congenital abnormalities, as well as their physiological effects and clinical implications, will be described. Course Prerequisite: BIO 101.

HCT 101 Fundamentals of Healthcare Professions

3 Credits

This course provides students with an overview of the various healthcare professions by covering and discussing fundamental aspects of the healthcare system. It includes an overview of healthcare development, how health delivery systems are structured, legal and ethical considerations of healthcare delivery, and an overview of various healthcare professions. Students are encouraged to discover health

professions through assignments, observations, and interviews. Course Prerequisites or Corequisites: None.

CHE 210 Organic Chemistry for Health Sciences

3 Credits

Topics included are chemistry of saturated and unsaturated hydrocarbons, aromatic compounds, ethers, and thiols, alcohols, phenols, aldehydes and ketones, carboxylic acids and esters groups. Amines and amides are also covered. The use of IUPAC nomenclature for all functional groups will be taught. Course Prerequisite: CHE 105.

BDS 200 Dental Anatomy and Occlusion

3 credits

This course acquaints the student with the morphologic components of the natural dentition and related anatomic structures. Course Prerequisite BIO 217.

BDS 200L Dental Anatomy and Occlusion Laboratory

1 credit

This lab-based course provides students with demonstrations, training, and guidance to carve teeth models using wax materials. The students will reinforce their knowledge of basic dental anatomy and will be provided with the training and experience required to shape and carve teeth models with varying anatomical differences. During the practice process, students will learn how to perform an accurate self-assessment based on a rubric system, they will gain manual dexterity. They will improve their control over the dental instruments. Course Prerequisite or Corequisite: BDS 200

BDT 210 Dental Material I

3 credits

The present course is designed for students to define and recite an appropriate overview of the basic knowledge of the physical, chemical, and mechanical properties of materials used in different branches of dentistry. Also, the students can determine all fundamentals knowledge of polymer, metals, and ceramics to bridge the gap between the obtained basic knowledge and the clinical dental operator. Course Prerequisite: CHE 105.

BDT 210L Dental Material lab

1 credit

This laboratory course is a continuity of Dental material I. The students will acquire and practical data about restorative dental materials as regards to their manipulation, properties, for lab and clinical application. Course Prerequisite or Corequisite: BDT 210.

[BDS 240 Introduction to Dentistry and Scientific Evidence](#)

2 credits

This course introduces students to dental practice. An overview of the basic concepts, principles, and procedures of various specialties in dentistry and historical and evolution developments.

This course focuses on specific and easy-to-understand steps for understanding scientific evidence and how it can be used in medical and dental practice. Course Prerequisite: BDS 200.

[BDS 217 Head and Neck Anatomy](#)

2 credits

This course is an overview of the development and anatomy of the head and neck. The head and neck osteogeny will be described, and bone components will be identified. Muscles, vasculature, and neural innervation will be addressed in detail and associated with clinical correlations. The anatomy of the oral cavity, tongue, and pharynx will also be described. Course material will be supplemented with 3D images and videos. Course Prerequisite: BIO 217.

[BDS 217L Head and Neck Anatomy Lab](#)

1 credit

This laboratory course will follow the theoretical course BDS 217 Head and Neck Anatomy. The sessions will allow the student a better understanding and memorize the 3D anatomy of the head and neck. Course Prerequisite or Corequisite: BDS 217.

[BDT 211 Dental Materials II](#)

3 credits

This course is a continuity of Dental materials I.

The students will acquire theoretical data about laboratory dental materials as regards their presentation modes, compositions, manipulation, properties, and limitations. The course is also directed to enable

students to make rational decisions on properly selecting dental materials and their use relying on evidence-based dentistry. Course Prerequisite or Corequisite: BDT 210.

[BDT 330L Removable Prosthodontics lab I](#)

1 credit

This course will give students practical knowledge in the fabrication of removable prosthesis. It will allow students to develop their technical skills through construction of partial and complete dentures. Course Prerequisite: BDT 330.

[BDT 350 Dental ceramics](#)

2 credits

Ceramic materials have evolved significantly during the past decades along with their fabrication techniques, and all-ceramic restorations have gained in popularity. This course will give laboratory technicians complete knowledge of the properties and characteristics of ceramics in order to select the most appropriate restorative materials for each case. The microstructure and method of fabrication will be discussed. Course Prerequisite: BDT 210.

[BDT 320L Fixed Prosthodontics lab I](#)

1 credit

An introductory lab course to the types of fixed restorations and techniques of fabrication. The theories and concepts for the use of different types of fixed restorations will be included. Course Prerequisite: BDT 320.

[BDT 330 Partial Denture Prosthodontics I](#)

3 credits

This course is an introduction to the theories and procedures of partial framework fabrication. The procedures of design, duplicating, waxing, investing, casting, and finishing will be developed. Then the arrangement and processing of artificial teeth and the repairing of frameworks will be introduced. Prerequisite: BDT 211.

[BDT 340 Complete Denture Prosthodontics I](#)

3 credits

An introduction to the setup and arrangement of artificial teeth. Waxing, investing, processing, and finishing procedures will also be taught. The basics of denture repair will be introduced. Prerequisite: BDS 200.

[BDT 370 Orthodontic/Pedodontics appliances](#)

3 credits

This course covers the indication and guidelines for orthodontic and pedodontic appliances. The student will be able to discuss the use and design of those appliances in children and young adults. Course Prerequisite or Corequisite: BDS 217.

[BDT 370L Orthodontic/Pedodontics appliances lab I](#)

1 credit

An introduction to the basic laboratory skills for the fabrication of orthodontic and pedodontic appliances. Special emphasis will be placed on wire bending techniques and designs. Students will also be introduced to the pouring and trimming of diagnostic casts. Course Prerequisite or Corequisite: BDT 370.

[BDT 360 CAD/CAM and Digital Dentistry](#)

3 credits

The course covers the theoretical knowledge related to Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM) of dental appliances in close proximity to the clinical environment using digital technology (optic impression, digital photograph, 3D printing ...). Course Prerequisite or Corequisite: BDT 320.

[BDT 380 Dental Implants](#)

3 credits

Students will gain knowledge of the principles of implant dentistry, fixed and removable restorations over dental implants. Students will also train in digital and analog surgical guides for implant surgery. Course Prerequisite: BDS 217.

[BDT 380L Dental Implants lab](#)

1 credit

Students will gain practical knowledge of the principles of fixed and removable restorations over dental implants. Course Prerequisite: BDT 380.

[BDT 321L Fixed Prosthodontics lab II](#)

1 credit

Fixed procedures are continued with emphasis on multiple unit castings. Theory and techniques to be included are pontic design, acrylic veneer design, and soldering. Course Prerequisite: BDT 320.

[BDT 331L Removable Prosthodontics lab II](#)

1 credit

This course is a continuity of Removable Prosthodontics lab I, it will give students advanced practical knowledge in the fabrication of removable prosthesis. Course Prerequisite: BDT 330L.

BDT 490L Practical Laboratory Experience I

3 credits

This practicum in dental laboratory procedures may be given at AUIB dental laboratory or an extramural site. Course Prerequisite: BDT 321L.

BDT 460L Digital Dentistry lab I

1 credit

This course practical course will review current techniques for incorporating intraoral scanners, 3D CBCT imaging, and CAD/CAM Technology into laboratory practice. Students will rotate between the laboratory and the CAD/CAM planning rooms. Course Prerequisite: BDT 360.

BDT 496 Smile Design

3 credits

The digital smile design allows patients to see the potential esthetic outcomes of treatment and is a way to get acceptance by the patient prior to starting the physical processes. Classic dental processes use generating casts, testing vertical changes and esthetics with a mock-up. This course will develop the concept of using Smile design softwares for an esthetic outcome for the patient. Course Prerequisite: BDT 360.

BDT 420L Fixed Prosthodontics lab III

This laboratory course will give students advanced knowledge in the fabrication of fixed prosthesis. It will allow students to test and develop their practical skills for the construction of fixed prosthesis. Computer-aided design of dental prosthetic restorations will be emphasized. Course Prerequisite: BDT 321L.

BDT 430L Removable Prosthodontics lab III

1 credit

This course is a continuity of Removable Prosthodontics lab II, it will give students advanced practical knowledge in the fabrication of removable prosthesis. Computer-aided design of dental prosthetic restorations will be emphasized. Course Prerequisite: BDT 331L.

BDT 470L Orthodontic/Pedodontics appliances lab II

1 credit

The skills introduced in the basic practical course of Orthodontic/Pedodontics appliances lab I are amplified. More intricate wire bending exercises will be used. Acrylic placement, basic soldering, and welding techniques will be introduced. Course Prerequisite: BDT 370L.

BDT 498 Dental Laboratory Management and Business Procedures

2 credits

Practical laboratory management procedures and theories will be taught. Paper based and digital communication with dentists will be emphasized. Course Prerequisite: BDT 390L.

BDT 471L Orthodontic/Pedodontics appliances lab III

1 credit

This laboratory course will give students advanced knowledge in the fabrication of orthodontic prosthesis. It will allow students to convert their theoretical information into practical applications through the construction of orthodontic and pedodontic appliances. Course Prerequisite: BDT 370L.

BDT 461L Digital Dentistry lab II

1 credit

This course is a continuity of Digital dentistry lab I, students will acquire advance skills in using digital manufacturing dental prosthesis. Course Prerequisite: BDT 460L.

BDT 460L CAD/CAM lab

1 credit

This course practical course is a continuity for technical training on CAD/CAM Technology in the dental laboratory. Course Prerequisite: BDT 460L.

BDT 492L Practical Laboratory Experience II

3 credits

This practicum in dental laboratory procedures may be given at AUIB dental laboratory or an extramural site. Course Prerequisite: BDT 490L.

Technical Electives

The student will have to choose one course from the following elective courses offered by CHT.

HCT 480 - Marketing in the Healthcare Sector (3 Credits)

The course on Marketing in the Healthcare sector is designed to provide students with a comprehensive understanding of the marketing principles and their application in the healthcare industry. The course will cover various aspects of healthcare marketing such as market research, consumer behavior, branding, product development, pricing, distribution, and promotion. Students will learn how to apply marketing concepts to real-world healthcare scenarios, including the marketing of medical devices, pharmaceuticals, hospitals, and other healthcare services. The course will also cover regulatory considerations and ethical issues in healthcare marketing. The goal of this course is to equip students with the knowledge and skills

required to develop and execute effective marketing strategies in the healthcare sector. Prerequisite: None.

HCT 481 - Health Informatics (3 Credits)

This course describes the fundamental principles, concepts, and technological elements that make up the building blocks of Health Informatics. The course introduces fundamental characteristics of data, information, and knowledge in the domain, the common algorithms for health applications, and IT components in representative clinical processes. It also introduces the conceptual framework for handling the collection, storage, and the optimal use of biomedical data, as well as the concepts of population health and precision medicine and the information systems that support them. Emphasis is on the basic principles of knowledge management systems in biomedicine, various aspects of Health Information Technology standards, and IT aspects of clinical process modeling. Prerequisite: None.

HCT 486 - Leadership in Vision Sciences and Optometry (3 Credits)

Leadership in Vision Sciences and Optometry is an undergraduate course designed to provide students with an understanding of leadership principles and their application in the context of vision sciences and optometry. The course is designed to help students develop the skills necessary to lead and manage teams, organizations, and projects in the field of vision sciences and optometry. Prerequisite: None.

HCT 483 - Introduction to Clinical Research (3 Credits)

This course provides an overview of the fundamental concepts, principles, and practices involved in clinical research and research works involving human subjects. The course covers the process of designing, conducting, and analyzing clinical research, with a focus on ethical considerations, human subject protection, regulatory requirements, and the impact of clinical research on healthcare delivery and patient outcomes. Documentations required in clinical research will be described, and responsibilities of agencies and organizations responsible for human subject protection will be identified.

Throughout the course, students will learn about the different types of clinical research studies, including observational, interventional, and registry studies. They will also learn about the key components of a clinical study protocol, including eligibility criteria, randomization, and blinding. Prerequisite: HCT 331.

HCT 490 - Biostatistics and Epidemiology (3 Credits)

This is a fundamental course that addresses the science of biostatistics, epidemiology, and distribution of diseases in each population with emphasis on infectious disease epidemiology. The course also covers the statistical methods used in the assessment of epidemiological distributions. Topics include research methods and design, descriptive statistics, performance characteristics of diagnostic tests, graphical methods, probability, estimation, hypothesis testing, p-values, regression and correlation, and clinical trials. Prerequisite: MAT 101.

