



CDM 2101 - Dental Biomaterials Lecture

I. Course Information

Course: CDM 2101 - Dental Biomaterials Lecture
Semester and Year: Fall 2021
Course Start and End Dates: 07/26/2021 - 12/12/2021
Course Reference Number: 24005
Semester Credit Hours: 1.0
Building and Room: HPD-Assembly I Building - 2101TERY

II. Instructor Information

Professor: Dr. Jeffrey Y Thompson
Email: jeffthom@nova.edu
Phone: 954-262-7395
Office Hours:
Tuesday and Thursday, 10:00 - 11:00 am

III. Class Schedule and Location

Day	Date	Time	Location	Building/Room
F	07/30/2021 - 12/10/2021	11:10 AM - 11:59 AM	Ft Lauderdale/Davie Campus	HPD-Assembly I Building- 2101TERY

IV. Course Description

This course is a continuation of the biomaterials information from IRDS I & II, and is designed to provide additional scientific foundation on a wide range of dental materials topics. Most dental students are not familiar with materials science terminology, definitions, and concepts that are required to select, manipulate, and evaluate the extraordinary range of dental materials products. This course treats structure and property relationships for metals, ceramics, polymers, and composites. It provides a base for subsequent teaching of dental materials applications. It should form a framework to insure that each student is capable of understanding the full complement of new products developed each year. Those topics are currently integrated into other clinical science courses to guarantee that the information is presented in a timely fashion.

V. Course Objectives / Learning Outcomes

Course Learning Outcomes

At the completion of this course, each student should be able to:

1. Demonstrate an understanding of metals and alloys for various restorative applications, casting and soldering principles and materials, dental cements, denture base resin and its manipulation and application techniques, dental ceramics and their properties, finishing and polishing materials, and their interaction with dental tissues.
2. Demonstrate the proper techniques for the manipulation of a given material system to achieve the

optimum functional service behavior for each specific material.

3. Demonstrate an understanding of the limitations of the dental products covered, and solve problems in clinical dentistry related to the dental materials.

COLLEGE OF DENTAL MEDICINE COMPETENCY STATEMENTS Faculty Note: Use the most updated version of the CDM Predoctoral Competency document to select the corresponding competencies for this course. Be sure to select the number of the competency statement and the verbatim competency statement as it appears on the competency document. For each competency indicate the type of assessment (formative or summative) that will be employed to measure the attainment of the competency

Core Competencies:

6. Graduates must be competent in the restoration of teeth.

[CODA Predoctoral Standard 2-24(f)]

Formative Assessment - Midterm Exam

Summative Assessment - Final Exam

7. Graduates must be competent in communicating and managing dental laboratory procedures in support of patient care.

[CODA Predoctoral Standard 2-24(g)]

Formative Assessment - Midterm Exam

Summative Assessment - Final Exam

8. Graduates must be competent in the replacement of teeth including fixed, removable and dental implant prosthodontic therapies.

[CODA Predoctoral Standard 2-24(h)]

Formative Assessment - Midterm Exam

Summative Assessment - Final Exam

19. Graduates must be competent in the application of biomedical science knowledge in the delivery of patient care.

[CODA Predoctoral Standard 2-15]

Formative Assessment - Midterm Exam

Summative Assessment - Final Exam

26. Graduates must be competent in the use of critical thinking and problem-solving, including their use in the comprehensive care of patients, scientific inquiry and research methodology.

[CODA Predoctoral Standard 2-10]

Formative Assessment - Midterm Exam

Summative Assessment - Final Exam

28. Graduates must be competent to access, critically appraise, apply, and communicate scientific and lay literature as it relates to providing evidence-based patient care.

[CODA Predoctoral Standard 2-22]

Formative Assessment - Midterm Exam

Summative Assessment - Final Exam

- This refers to the same as the items in the CDM Competency Document; please see them listed below.

FOUNDATION KNOWLEDGE

STATEMENTS FOR THE GENERAL DENTIST

An outline, with selected examples, of the basic knowledge, cognitive skills and abilities for the practice of general dentistry.

FK3: Apply knowledge of physics and chemistry to explain the characteristics and use of technologies and materials used in the prevention, diagnosis, and management of oral disease and the promotion and maintenance of oral health.

Foundation Knowledge disciplines covered by FK-3 include: Basic Radiology, Dental Material Sciences, Biomaterials, Biophysics, etc.

Clinical Science areas where FK3 may have relevance include: Prosthodontics, Restorative Dentistry, Oral Diagnostics, Applied Biomaterials, Preventive Dentistry, Laser-Assisted Dentistry, Applied Pharmacology, Radiology, Implant Dentistry, Endodontics, Esthetic Dentistry, Cosmetic Dentistry, Radiation Oncology, Oral Oncology, etc.

FK3-2: Apply knowledge of the principles of chemistry to understand the properties and performance of dental materials and their interaction with oral structures in health and disease. (Encompasses Dental Material Sciences, Biomaterials, etc.).

Select examples include:

- advantages and disadvantages of biomaterials used in dentistry
- compatibility of dental materials both with each other and with biologic systems
- substantivity and the adhesion chemicals, drugs, dental plaque, food, etc. to dental materials or to tissues in the mouth

VI. Materials and Resources

Course Required Texts and Materials: K.J. Anusavice, Phillips' Science of Dental Materials, 12th Edition, W. B. Saunders Co., 2013.

Faculty Note: Please indicate the textbooks that are **required** for the class and if available, a hyperlink to the textbook. Also, indicate if there are articles or links to **required readings** that are required for the class *and* the site where the articles are available for the student (such as: Canvas, library, database).

Course Supplemental Materials: R.L. Sakaguchi, J.M. Powers, Craig's Restorative Dental Materials, 13th Edition. Elsevier, 2012.

- Supplemental, Recommended, Optional, NOT required.

The access to all instructional resources included in this course, such as, lectures, handouts, manuals, PowerPoint presentations, videos, photographs, pictures, articles and web links is limited to students who are enrolled in the course and is not for public distribution. The use of these instructional resources is exclusively for non-commercial and non-profit educational use. Students are recommended to download the instructional resources provided in the course, UNLESS, the course director instructs NOT to download specific files. We recommend that all students download, save, and keep the instructional materials from all the courses. These instructional resources will be very helpful references as you progress from year to year in the program.

VII. Course Schedule and Topic Outline

Course Schedule:

Session #	DATE & TIME	TOPIC	LECTURE ASSIGNMENT	CONTENT OUTLINE	LECTURER
1	6-Aug-21	Dental Ceramics - Part 1	Chapter 18	Terminology & classification, structure & chemistry, general properties	Dr. Thompson
2	13-Aug-21	Dental Ceramics – Part 2	Chapter 18	Porcelain, all-ceramic systems, properties	Dr. Thompson
3	20-Aug-21	Dental Ceramics - Part 3	Chapter 18	Properties, clinical behavior, clinical considerations	Dr. Thompson
4	27-Aug-21	Dental casting alloys	Chapter 16	Classification of dental casting alloys, Processing and properties	Dr. Thompson
5	3-Sept-21	Wrought alloys	Chapter 17	Deformation of metals, effect on properties shape memory alloys, dental applications	Dr. Thompson
6	10-Sept-21	Dental Implants	Chapter 20	Implant design, implant materials, clinical considerations for materials	Dr. Thompson
7	17-Sept-21	Review for Midterm Exam	Posted Review Sheet	Review of material from August 6 through September 10	Dr. Thompson
8	24-Sept-21	MIDTERM EXAM	Good Luck!		
9	1-Oct-21	Tissue Engineering	Chapter 21	Terminology, State of the Art	Dr. Thompson
10	8-Oct-21	Denture Base Materials	Chapter 19	Composition and chemistry, processing techniques	Dr. Hsu
11	15-Oct-21	Dental Casting Investments	Chapter 10	Review of Waxes, properties, investment materials, clinical considerations	Dr. Castellon
12	22-Oct-21	Finishing & Polishing materials	Chapter 11	Principles of cutting, finishing & polishing, abrasive and instrument types, clinical considerations	TBD
13	29-Oct-21	TBD	Posted Materials (TBD)	TBD	Dr. Thompson
14	5-Nov-21	Review for Final Exam	Posted Review Sheet	Review of material from October 1 through October 29 (plus key material from the first half of the course)	Dr. Thompson
15	12-Nov-21	FINAL EXAMINATION (10am)	Good Luck!		

Topic Outline:

All Materials necessary for each lecture will be provided prior to the scheduled lecture date and time.

“Important note – Please note that due to the current Coronavirus pandemic, course schedules and course activities may be modified now and in future. Faculty and students are responsible for keeping apprised of these changes and adjusting their schedules accordingly.”

VIII. Instructional Methods

In this section of the syllabus you will find information about any course (instructional, assessment, assignments, benchmarks and/or clinical) modifications that were added to the course as a result of COVID-19

N/A

IX. Assignments

Description of Assignments, Point Value and Rubrics

Students are responsible for reviewing all lecture materials posted on canvas and communicated during scheduled class, and attending/participating in all scheduled class sessions.

X. Grading Criteria

Provide a List of all the graded work in the course (Assessments, Class Activities, Classwork and Assignments) with Point or Percentage Values, or required Completion item.

Grading Scale:

There will be a midterm Exam and a Final Exam. Each will account for 50% of the grade in the course. Both exams will be a combination of multiple choice and True / False questions.

Course Final Grade Mode for the course (Pass/Fail, PR/NPR or Letter Grade). For a continuum course, please specify the grade mode for each semester.

Grade Mode:

Letter Grade. Scale is 0 - 100 to be converted using conversion chart below

Course Grading Scale

Letter Grade	GPA	Equivalence
A	4	93 to 100
A-	3.75	90 to < 93
B+	3.5	86 to < 90
B	3	83 to < 86
B-	2.75	80 to < 83
C+	2.5	76 to < 80
C	2	70 to < 76
F	0	<70

XI. Course Policies

COURSE ATTENDANCE REQUIREMENTS, REMEDIATION POLICY, ALL CDM POLICIES

Attendance Policy : Please refer to appropriate pages of the NSU-CDM 2020-2021 Student Handbook.

Link to the handbook:

<https://liverootnova.sharepoint.com/dentmed/Active%20Docs/Policies%20and%20Procedures/Pre%202020%20CDM%20PreDoctoral%20Student%20Handbook.pdf?wa=wsignin1.0>

Remediation Policy: Please refer to appropriate pages of the NSU-CDM 2020-2021 Student Handbook.

“Successful completion of each CDM course requires compliance with the CDM Code of Behavioral Conduct.”

CDM College Attendance Policy Please note that, the Office of Admissions, Student Affairs and Services manages excused absences including sick days, mission trips, dental meetings, externships, interviews, family events, and other personal leave time, etc. and all student absences will continue to be

tracked in axiUm. (Please refer to NSU Wide Religious Holidays Policy in the Student Handbook.) • Planned excused absences: please fill out the appropriate paperwork, with backup documentation (e.g. physician's note), and submit on the online portal for the Office of Student Services prior to the scheduled absence, so that we can approve the leave time, and help you map out a plan to make up the work. It is the student's responsibility to inform the course director for any courses you will be missing, your team leader for any clinic sessions that will be missed and/or the Coordinator of Extramural Programs (Dr. Mairelina Godoy), etc. of your planned absence(s). • Unplanned excused absences: please email Dr. Galka at agalka@nova.edu with a cc to cdmservices@nova.edu to report that you will be out, the reason for your absence and to also let us know if you plan to return to school the following day. You should also email the course director for any courses you will be missing, Dr. Mairelina Godoy mg1189@nova.edu for any rotations you will be missing and/or your team leader for any clinic sessions scheduled for that day. You must continue to email us daily to keep us updated if you will be out additional days and you can submit your SREA form together with backup documentation when you know the date you will return to school. • The student will be responsible for making up all missed rotations, all material presented in lectures, all laboratory projects, all written and practical examinations (including OSCEs) and must fulfill all didactic and clinical responsibilities as outlined in the individual course syllabi. Also, please review the attendance policy in the individual course syllabi. • Please do not schedule externships or interviews when you are scheduled for an examination or rotation. • Remember, it is your responsibility to reach out to our office for any unexcused absences to see if these fall under excused absences and/or to see how the unexcused absence will be managed. Also, please contact Dr. Mairelina Godoy directly to arrange makeup of any and all missed rotations, which will take place during optional clinicweeks. • Every student will be able to take 1 Personal Day/per Semester (3 Personal Days/Academic Year) with NO BACKUP DOCUMENTATION REQUIRED, provided the day(s) are not taken when you are scheduled for a rotation, written examination, practical/competency examination, OSCE or taken directly before/after a school holiday, etc. These absences will be managed through our office and designated as excused absences, provided our office is notified by email in advance or on the day of the absence. (Please indicate in the email if you will be using a personal day and designate D-1, D-2, D-3 or D-4 student.) For any additional absences to the 1 Personal Day/per semester, or in the event that you will be missing a written examination, a preclinical or clinical practical/competency examination, including an OSCE, or rotation, backup documentation WILL be required. Again, it is the student's responsibility to notify all course directors, team leaders, and/or the Coordinator of Extramural Programs, etc. affected by your absence(s). Please check your individual schedule before requesting a personal day, to be sure that you will not be missing a rotation or an exam. A personal day will be recorded as a full day. (Half days cannot be requested.) A personal day must be requested on or before the day in question and cannot be used retroactively. **COVID-19 Protocol (subject to change)**1. NO STUDENT IS TO COME TO SCHOOL SICK- if you do not feel right- please do NOT come to school. Email Dr. Galka- Assistant Dean for Admissions, Student Affairs and Services (agalka@nova.edu) 2. If a student has had direct/close contact with someone who has been infected with COVID-19 or is experiencing COVID-like symptoms- immediately self- isolate/quarantine. Email Dr. Galka and Dr. Schweizer- Director Infection Prevention Programs (schweize@nova.edu). a. Direct Exposure/ Asymptomatic: test on day 7- if negative test result- can come back after 10 days : if NO test- quarantine 14 days b. Symptomatic (with or without Direct Exposure): test immediately and then again on day 7- if negative test result on day 7- can come back after 10 days : NO test- quarantine 14 days and must be symptom-free for 72 hours3. If a student tests positive for COVID-19: remain self-isolated. To return to school: student needs to have 2 consecutive negative test results in a row (at least 24 hours apart). 4. Students who are in quarantine, need to contact both Dr. Galka and Dr. Hernandez (marher@nova.edu) to determine if they can participate in online courses during this time

XII. University Policies

Academic Integrity: Cheating or inappropriate behavior during any written examination, quiz, any assignment, any project; plagiarism of any work(s), or other unethical behavior will not be tolerated; the student risks receiving a grade of zero (0) for said examination, quiz, assignment, project and may be

referred to the Associate Dean for Academic Affairs and the Student Progress Committee. Please refer to appropriate pages of the NSU-CDM 2020-2021 Student Handbook. and the NSU Student Handbook located at

<https://liverootnova.sharepoint.com/dentmed/Active%20Docs/Policies%20and%20Procedures/Pre%20and%202020%20CDM%20PreDoctoral%20Student%20Handbook.pdf?wa=wsignin1.0> .

Plagiarism Policy: All assignments, exams, works, patient care - written, laboratory, oral, clinical must be done as the independent work of each individual student. Plagiarism, copying or sharing the work of another or altering documentation to reflect something is your own work that is not; reflect false attendance, are considered serious offences that will not be tolerated. THESE ACTIONS WILL BE CONSIDERED IN VIOLATION OF THE UNIVERSITY AND THE CDM CODE OF BEHAVIORAL CONDUCT AND WILL BE REFERRED FOR APPROPRIATE ACTION. Students who need assistance in their learning goals should communicate with the appropriate NSU-CDM course director and/or faculty. Please refer to appropriate pages of the NSU and the CDM 2020-2021 Student Handbook. Following a link to the NSU Student Handbook

<https://liverootnova.sharepoint.com/dentmed/Active%20Docs/Policies%20and%20Procedures/Pre%20and%202020%20CDM%20PreDoctoral%20Student%20Handbook.pdf?wa=wsignin1.0>

University Policy

Class content throughout this course may be recorded in accordance with the NSU Class Recording Policy. If class content is recorded, these recordings will be made available to students registered for this course as a supplement to the classroom experience. Recordings will be made available to all students who were registered to attend the live offering of the class, regardless of a student's section or discipline, or whether the student is participating in the course online. If recordings are intended to be accessible to students or third parties who were not registered for the live offering of the class, students' personally identifiable information will be removed or redacted from the recording, unless (1) their written consent to such disclosure was previously provided, or (2) the disclosure is permissible in accordance with the Family Educational Rights and Privacy Act ("FERPA").

Students are prohibited from recording audio or video, or taking photographs in classrooms (including online classes) without prior permission from the instructor or pursuant to an approved disability accommodation, and from reproducing, sharing, or disseminating classroom recordings to individuals outside of this course.

Students found engaging in such conduct will be in breach of the Student Code of Conduct and subject to disciplinary action.

Title IX/Sexual Misconduct: Sexual violence and sexual harassment are contrary to our core values and have no place at Nova Southeastern University. In accordance with Title IX and other laws, NSU prohibits discrimination, including sex-based discrimination and discrimination towards pregnant/parenting students. If you or someone you know experience(s) sexual violence and/or sexual harassment, there are resources and options available. To learn more or to report an incident, please visit the NSU Title IX website at www.nova.edu/title-ix. Please be aware that as an instructor, I am not a confidential resource, and I will need to report any incidents of sexual misconduct to the NSU Title IX Coordinator. You can also contact Laura Bennett, NSU's Title IX Coordinator directly at laura.bennett@nova.edu or 954-262-7858.