1. Course Name:

Dental Materials

2. Course Code:

MTDE2101

3. Semester / Year:

1nd semester / 2024-2025

4. Description Preparation Date:

7/10/2025

5. Available Attendance Forms:

Attendance in the classroom

6. Number of Credit Hours (Total) / Number of Units (Total):

2 hours of theory

7. Course administrator's name (mention all, if more than one name)

Name: T.A. Ali Mushtaq Neamah

Email: alimushtsq295@gmail.com

8. Course Objectives

Course Objectives:	• Preparing a generation of graduates in the dental industry who possess a high level of scientific understanding of dental materials, their physical and chemical properties, and how to handle them, especially since they will be in direct contact with the oral cavity and patients. • The possibility of participating in scientific research and specialized scientific conferences to enhance their skills and develop their expertise in this field.

9. Teaching and Learning Strategies

Strategy	By the end of the course, the student will be able to: • Easily Work in in medical centers performing laboratory tests. • 2. Participate with confidence in specialized scientific conferences. • 3.Workingin medical laboratories and on equipment related to the this specialty.

10. Course Structure

Week	Hours	Required Learning	Unit or subject	Learning method	Evaluation

		Outcomes	name		method
Syllabus of The Theoretical Course					
1	2	Impression, materials, definition, requirements	Lecture	Attendance in classroom	Daily quiz
2	2	Classification of impression material, non–elastic impression material	Lecture	Attendance in classroom	Daily quiz
3	2	Hydrocolloids impression materials	Lecture	Attendance in classroom	Daily quiz
4	2	Elastomeric impression material	Lecture	Attendance in classroom	Daily quiz
5	2	Investment materials, definition requirements	Lecture	Attendance in classroom	Daily quiz
6	2	Classification of investment materials	Lecture	Attendance in classroom	Daily quiz
7	2	Dental casting alloy	Lecture	Attendance in classroom	Daily quiz
8	2	High noble and noble alloy, Classification	Lecture	Attendance in classroom	Daily quiz
9	2	Base metal alloys, types	Lecture	Attendance in classroom	Daily quiz
10	2	Titanium alloys	Lecture	Attendance in classroom	Daily quiz
11	2	Wrought alloy, uses, manipulation	Lecture	Attendance in classroom	Daily quiz
12	2	Wrought Nickel–Titanium Alloy	Lecture	Attendance in classroom	Daily quiz
13	2	Wrought stainless steel Alloy	Lecture	Attendance in classroom	Daily quiz
14	2	Wrought beta titanium alloy	Lecture	Attendance in classroom	Daily quiz
15	2	Soldering and welding brazing	Lecture	Attendance in classroom	Daily quiz
Syllabus of The Practical Course					
1	2	Demonstration of types of	Lecture	Attendance in	Daily quiz

		trays		laboratory	
2	2	Demonstration of types of non elastic impression material	Lecture	Attendance in laboratory	Daily quiz
3	2	Demonstration of hydrocolloids impression material	Lecture	Attendance in classroom	Daily quiz
4	2	Demonstration of elastomer impression material	Lecture	Attendance in classroom	Daily quiz
5	2	Demonstration of investment martials	Lecture	Attendance in classroom	Daily quiz
6	2	Demonstration of investing	Lecture	Attendance in classroom	Daily quiz
7	2	Demonstration of available alloys	Lecture	Attendance in classroom	Daily quiz
8	2	Demonstration of high noble noble alloys	Lecture	Attendance in classroom	Daily quiz
9	2	Available base metal alloys	Lecture	Attendance in classroom	Daily quiz
10	2	Demonstration of titanium alloy	Lecture	Attendance in classroom	Daily quiz
11	2	Demonstration of wrought alloy, uses, manipulation	Lecture	Attendance in classroom	Daily quiz
12	2	Demonstration of wrought Nickel–Titanium Alloy	Lecture	Attendance in classroom	Daily quiz
13	2	Demonstration of wrought stainless steel Alloy	Lecture	Attendance in classroom	Daily quiz
14	2	Demonstration of wrought b titanium alloy	Lecture	Attendance in classroom	Daily quiz
15	2	Demonstration of soldering, brazing and welding	Lecture	Attendance in classroom	Daily quiz

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, or med and final exams, ... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. Phillips, Ralph W., 1896–; Skinner, Eugene W. (Eugene William), 1896– Science of dental materials

	2. Restorative Dental Materials Peyton, F. A . Peyton 3. Applied Dental Materials, 9th Edition by John F. McCabe, Angus W. G. Walls
Main references (sources)	1. Volumetric Changes in Acrylic Denture Base Material by Nadira Abdulridha Hatim. 2. A Comparative Study between Two Types of Dental Cas Alloys Abd Al-Chani A. Mhiesen 3. Introduction to Dental Materials by Richard Van Noort
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	1- https://www.sciencedirect.com/journal/dent-materials 2- https://www.sciencedirect.com/topics/medicine-and-dentistry/dental-material-science

1. Course Name:

Oral histology

2. Course Code:

MTDE2104

3. Semester / Year:

1nd semester / 2024-2025

4. Description Preparation Date:

28/9/2025

5. Available Attendance Forms:

Attendance in the classroom

6. Number of Credit Hours (Total) / Number of Units (Total):

2 hours of theory

7. Course administrator's name (mention all, if more than one name)

Name: Prof. Amal Ebrahim Dayoub

Email: aamaldd@yahoo.com

8. Course Objectives

Course Objectives:	• Preparing graduated students, who are proficient in the dental industry, and have extensive experience in the field of oral tissues and all anatomical structures in the oral cavity. Which help them to work in laboratories and with patients. • The possibility of participating in scientific researches to develop their skills and increase their experience.

9. Teaching and Learning Strategies

Strategy	By the end of the course, the student will be able to: • Easily Work in in medical centers performing laboratory tests. • 2. Participate with confidence in specialized scientific conferences. • 3.Workingin medical laboratories and on equipment related to the this specialty.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of The Theoretical Course					
1	2	Embryological development	Lecture	Attendance in the classro	Daily quiz

2	2	Development of face	Lecture	Attendance in the classro	Daily quiz
3	2	Development of cavity	Lecture	Attendance in the classro	Daily quiz
4	2	Development of teeth	Lecture	Attendance in the classro	Daily quiz
5	2	Amelogenesis	Lecture	Attendance in the classro	Daily quiz
6	2	Enamel structure	Lecture	Attendance in the classro	Daily quiz
7	2	Dentinogenesis	Lecture	Attendance in the classro	Daily quiz
8	2	Dentine structure	Lecture	Attendance in the classro	Daily quiz
9	2	Pulp	Lecture	Attendance in the classro	Daily quiz
10	2	Cementogenesis	Lecture	Attendance in the classro	Daily quiz
11	2	Cementum structurr	Lecture	Attendance in the classro	Daily quiz
12	2	Bone formation	Lecture	Attendance in the classro	Daily quiz
13	2	Bone structure	Lecture	Attendance in the classro	Daily quiz
14	2	Periodontal ligament	Lecture	Attendance in the classro	Daily quiz
15	2	Oral mucosa	Lecture	Attendance in the classro	Daily quiz

Syllabus of The Practical Course

1	3	Slide prepartion	Lecture	Attendance in the laborat	Daily quiz
2	3	Cell types	Lecture	Attendance in the laborat	Daily quiz
3	3	Epithelial tissue	Lecture	Attendance in the classro	Daily quiz
4	3	Connective tissue	Lecture	Attendance in the classro	Daily quiz
5	3	Facial tissue	Lecture	Attendance in the classro	Daily quiz
6	3	Oral tissue development	Lecture	Attendance in the classro	Daily quiz
7	3	Teeth development	Lecture	Attendance in the classro	Daily quiz
8	3	Development of enamel	Lecture	Attendance in the classro	Daily quiz
9	3	Development of dentine	Lecture	Attendance in the classro	Daily quiz
10	3	Development of Pulp	Lecture	Attendance in the classro	Daily quiz
11	3	Development of Cementum	Lecture	Attendance in the classro	Daily quiz
12	3	Development of Alveolar bone	Lecture	Attendance in the classro	Daily quiz
13	3	Development of periodontal tissu	Lecture	Attendance in the classro	Daily quiz
14	3	Development of mucosa	Lecture	Attendance in the classro	Daily quiz
15	3	Cleft lip and palate	Lecture	Attendance in the classro	Daily quiz

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, or med and final exams, ... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. 1.Chandra, S; Chandra, Sh; Chandra, M;

	Chandra, G; Textbook of: Dental & Oral histology, 2 nd Edition,2007. 2.Farooq,I; Ali,S; Anderson,p. 2021. An illustrated guide to oral Histology,Wiley Blackwell.ISBIN:978-1-119-66944-9. 3. Nancy. Ten Cates Oral Histology: Development, Structure, and Function,Mosby,2007,432p
Main references (sources)	1.Winning, T.A; Townsend, G.C. Oral mucosal embryology and histology, Elsevier Science,2000, 655 Avenue of the Americas, New york, NY 10010. 2. Karim, A.2010. Histology of the Oral Cavity,IMS,MSU. 3. Abbas Ali,S.A & Syed,S. 2020. Teaching and Learning strategies of Oral Histology Among Dental Students,Int.J.Morphol, 38(3):634-639.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	1- Oral anatomy, Histology and Embryology, 6th edition. https//www.nature.com 2- Oral anatomy, Histology and Embryology, 6th edition. https//www.researchgate.net.

Academic description of complete denture

1. **Course Name:** Complete Denture

2. Course Code:

MTDE2102

3. **Semester / Year:** first semester/second year

4. **Description Preparation Date:** 1/10/2025

5. **Available Attendance Forms:** Theoretical and practical in the classroom and laboratory

6. **Number of Credit Hours (Total) / Number of Units (Total):** 30 theoretical hours + 75 practical hours/ 4

7. Course administrator's name (mention all, if more than one name)

Name: Asst. Lec. Zahraa Saadi Noori
Email: drzahrra@gmail.com

8. Course Objectives

Course Objectives	**● Introducing the student to the basic steps and materials involved in makir an acrylic complete denture** **● Enabling the students of the Dental Industry Department in the manufactu of acrylic complete dentures**

9. Teaching and Learning Strategies

Strategy	**1- Teaching the student the ability to diagnose each case, distinguish between cases, a choose the appropriate treatment plan** **2 - Teaching the student the best choice for dental prosthetics for each case** **3- Introducing the student to laboratory tools and the steps for making a removable complete denture** **4- Enabling the student to manufacture the removable complete denture**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

First	2	**Understand the terminology of complete denture industry**	Complete den terminology :definition &objec	**Theoretical**	**Short exams and discuss**
Second	2	**Know the anatomical part of Maxillary arch**	Anatomical landm of the maxil edentulous arch	**Theoretical**	**Short exams and discuss**
Third	2	**Learn about the anatomy mandibular arch**	Anatomical landm of the mandibular edentulous arch	**Theoretical**	**Short exams and discuss**
Forth	2	**Learn about the type of materia used in primary and final impression**	Materials used for primary, secondary and boxing impres	**Theoretical**	**Short exams and discuss**
Fifth	2	**Identify special tray, record bas and occlusal rim construction methods in order to make the complete denture**	Special trays, Rec base and Occlusal definition, properti & materials used f construction	**Theoretical**	**Short exams and discuss**
Sixth	2	**Know about the relation betw the maxillary and mandibular ar**	Maxillo-mandibula relationship	**Theoretical**	**Short exams and discuss**
Seventh	2	**Learn about the articulator, types, and how to use it**	Articulator and mounting: definiti uses & types	**Theoretical**	**Short exams and discuss**
Eighth	2	**Learn method of determination occlusion**	Occlusion (bal occlusion)	**Theoretical**	**Short exams and discuss**
Ninth	2	**Identify the types and size artificial teeth**	Selection of anteri posterior teeth	**theoretical**	**Short exams and discuss**
Tenth	2	**Learn how to arrange teeth and it to make a complete denture**	Guidelines artificial t arrangement Arrangement anterior teeth	**theoretical**	**Short exams and discuss**
Eleventh	2	**Learn how to stabilize and set the posterior teeth**	Arrangement posterior teeth	**theoretical**	**Short exams and discuss**
Twelfth	2	**Learn about wax using and arrangement**	Waxing, carving post dam	**theoretical**	**Short exams and discuss**
Thirteenth	2	**Learn how to put the cast in wi flask**	Flasking and de-flasking	**theoretical**	**Short exams and discuss**
Fourteenth	2	**Get to know how to press and c the complete denture**	Packing and curing	**theoretical**	**Short exams and discuss**
Fifteenth	2	**Get to know how to finish and polish the complete dentur**	Finishing and polishing	**theoretical**	**Short exams and discuss**

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

Daily exams: 10%
Semester exams: 70%
Preparing reports: 10%
Discussions in practical: 10%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Boucher's Prosthodontic Treatment Edentulous Patients
Recommended books and references (scientific journals, reports…)	Dental journal
Electronic References, Websites	Google scholar

Academic description of Crowns

1. **Course Name:** Crowns (basic)

2. Course Code:

MTDE2103

3. **Semester / Year:** first semester/second year

4. **Description Preparation Date:** 27/9/2025

5. **Available Attendance Forms:** Theoretical and practical in the classroom and laboratory

6. **Number of Credit Hours (Total) / Number of Units (Total):** 30 theoretical hours + 75 practical hours/ 5

7. Course administrator's name (mention all, if more than one name)

Name: Asst. Lec. Eba'a Enad Hameed
Email: ebaaenad@gmail.com

8. Course Objectives

Course Objectives	**● Introducing the student to the basic steps involved in taking an impressio and preparing a working cast** **● Enabling the students of the prosthodontic Department to know the basic steps followed in preparing a cast, such as cutting, mounting, and waxing**

9. Teaching and Learning Strategies

Strategy	**1- Teaching the student the ability to take an impression, distinguish between cases, choose the appropriate treatment plan.** **2 - Teaching the student the best choice for dental prosthetics for each case** **3- Introducing the student to laboratory tools and the steps for making crowns** **4- Enabling the student to manufacture crowns**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	2	Terms used in crowns	Crowns, bridge Fixed partial denture	theoretical	Short exams and discuss

Second	2	**Know the types of crowns**	**Complete cast Crown, metal ceramic crown**	**theoretical**	**Short exams and discuss**
Third	2	**Learn about types of finishing line**	**Feather edge, bevel, chamfer, shoulder**	**theoretical**	**Short exams and discuss**
Forth	2	**Biological consideration of too preparation**	**Conservation of tooth structure and periodont health, protection of de pulp,**	**theoretical**	**Short exams and discuss**
Fifth	2	**Mechanical consideration of to preparation**	**Retention, resistance and durability**	**theoretical**	**Short exams and discuss**
Sixth	2	**Disinfection of an impression a Cast and pouring technique**	**Taking an impression a pouring a cast**	**theoretical**	**Short exams and discuss**
Seventh	2	**Working cast and die, material used for working the cast and**	**Stone, die stone, Plaster**	**theoretical**	**Short exams and discuss**
Eighth	2	**Working cast and die, types techniques used for fabricatior**	**Pouring technique, trimmer, saw, And vibrator**	**theoretical**	**Short exams and discuss**
Ninth	2	**Cutting of the die and method exposing the finishing line.**	**Utilizing of saw**	**theoretical**	**Short exams and discuss**
Tenth	2	**Fundamentals of occlusion**	**Centric occlusion, Cent relation, articulation**	**theoretical**	**Short exams and discuss**
Eleventh	2	**Mandibular movements: Functional and parafunctic movements**	**Opening, closing, Shafting**	**theoretical**	**Short exams and discuss**
Twelfth	2	**Articulators and face bow**	**Types of articulators**	**theoretical**	**Short exams and discuss**
Thirteenth	2	**Bite registration and mounting**	**Upper and lower bite dimensions, mounting**	**theoretical**	**Short exams and discuss**
Fourteenth	2	**Waxing procedure**	**Wax up of teeth**	**theoretical**	**Short exams and discuss**
Fifteenth	2	**Waxing instruments, die spa and luting agent**	**Lacron carver and wax knife**	**theoretical**	**Short exams and discuss**

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

Daily exams: 10%
Semester exams: 70%
Preparing reports: 10%
Discussions in practical: 10%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Contemporary fixed prosthodontics
Recommended books and references (scientific journals, reports…)	Dental journal
Electronic References, Websites	Google scholar

Course Description Form

1. Course Name: Chemistry (Basic)	
2. Course Code: MTDE2105	
3. Semester / Year: First semester/Second year	
4. Description Preparation Date: 16/10/2025	
5. Available Attendance Forms: Theoretical (Face to Face), Practical (Lab)	
6. Number of Credit Hours (Total) / Number of Units (Total): 6/4	
7. Course administrator's name	
Name: Assistant Lecturer Anwar Khairi Abd Al-Askari Email: anwarkhairyo@gmail.com	
8. Course Objectives	
Course Objectives	• Informing the student about the basics of the chemical compositions of most dental materials and how to deal with them. • Enabling the student to identify t molecular and structural composition dental materials.
9. Teaching and Learning Strategies	
Strategy	**Interactive Lectures** • Use visual aids (diagrams, charts, and videos) to explain abstract concepts like atomic structures, chemical bonding, or periodic trends. **Demonstrations and Experiments** • Perform simple lab demonstrations (e.g., chemical reactions like acid-base neutralization or color changes with pH indicators) to make concepts tangible. **Practice Problems** • Provide plenty of opportunities to solve chemistry problems, such as

	stoichiometry calculations, identifying compounds, and writing chemical formulas. **Visualization and Drawing** • Encourage students to draw atomic structures, molecular shapes, or reaction mechanisms to reinforce understanding.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Introducing the student to atom, atomic structure and isotopes.	Introduction to General Chemistry (Matter). Classification of matter.	interactive-visual	Short exams and discuss
2	2	Introducing the student to atom, atomic structure and isotopes.	Atom, atomic number, mass number, atomic mass and isotopes	interactive-visual	Short exams and discuss
3	2	Introducing the student to the types of chemical bonds.	Identify the elements in the periodic table and their chemical properties.	interactive-visual	Short exams and discuss
4	2	Introducing the student to the types of chemical bonds.	Identify the types of chemical bonds.	interactive-visual	Short exams and discuss
5	2	Introducing the student to the Methods of analysis.	Method of analysis, solutions, standard solutions.	interactive-visual	Short exams and discuss
6	2	Introducing the student to the	Molarity, molality,	interactive-visual	Short exams

		Methods of analysis.	normality and dilution.		and discuss
7	2	Define terms like chemical reaction, equilibrium constant, reaction rate, and catalyst.	Chemical reactions, equilibrium constant, reaction rout, catalyst.	interactive-visual	Short exams and discuss
8	2	List factors that affect solubility, such as temperature, pressure, and nature of the solvent.	Solubility and ionization	interactive-visual	Short exams and discuss
9	2	Measure the pH of various solutions using indicators, pH paper, and electronic pH meters accurately.	Neutralization analysis, acid and base theory	interactive-visual	Short exams and discuss
10	2	Teaching the student to conduct pH calculations and use the pH scale to classify solutions as acidic, basic, or neutral.	PH, buffers and end point	interactive-visual	Short exams and discuss
11	2	Analyze absorption spectra to determine key parameters such as wavelength of	Spectroscopy (Optical spectroscopy).	interactive-visual	Short exams and discuss

		maximum absorption (λ_{max}) and molar absorptivity.			
12	2	Define Beer's Law and state its mathematical equation: A=ε.c.l	Beers law	interactive-visual	Short exams and discuss
13	2	Informing the student about the basics of the chemical compositions of most dental materials	Chemical properties of dental material	interactive-visual	Short exams and discuss
14	2	Identify the structural components of lipids, such as glycerol and fatty acids.	Lipids, Proteins	interactive-visual	Short exams and discuss
15	2	Define vitamins and classify them as water-soluble (e.g., B-complex, C) or fat-soluble (e.g., A, D, E, K).	Enzymes and vitamins	interactive-visual	Short exam and discuss
Syllabus of The Practical Course					
1	4	Teaching student Knowing and following proper procedures and regulations for safe handling, use, and disposal of chemicals.	General guidance and Laboratory first aid.	interactive-visual	Oral-written quiz-practical application

2	4	Teaching student Knowing and following proper procedures and regulations for safe handling, use, and disposal of chemicals.	Methods of manipulation.	interactive-visual	Oral-written quiz-practical application
3	4	Evaluating the best methods for measuring mass, recognizing the importance of accurate calibration, and analyzing data for consistency and reliability.	The balances weighing.	interactive-visual	Oral-written quiz-practical application
4	4	Perform titrations for determining chloride ion concentration using silver nitrate ($AgNO_3$) and calcium ion concentration using complexometric titration (e.g., EDTA method).	Determination of Calcium (Ca), Chlorine (Cl).	interactive-visual	Oral-written quiz-practical application
5	4	Properly prepare a sample for melting point determination,	Determination of melting point.	interactive-visual	Oral-written quiz-practical application

		ensuring it is free from contamination and in the correct form (e.g., finely powdered, packed into a capillary tube).			
6	4	Knowledge of how to handle volatile or reactive substances safely when preparing for boiling point determination.	Determination of boiling point.	interactive-visual	Oral-written quiz-practical application
7	4	Develop clear, fair, and well-structured test or quiz questions that effectively assess knowledge and understanding of the subject matter.	Test	interactive-visual	Oral-written quiz-practical application
8	4	Apply proper filtration techniques to separate solids from liquids, using equipment like filter paper, Buchner funnels, or vacuum	Filtration, recrystallization and distillation.	interactive-visual	Oral-written quiz-practical application

		filtration setups.			
9	4	Perform qualitative analysis to identify the composition of unknown substances through qualitative tests and chemical reactions.	Qualitative and quantitative analysis.	interactive-visual	Oral-written quiz-practical application
10	4	Conduct a titration by slowly adding the titrant from the burette to the analyte in the conical flask while constantly swirling the flask to ensure thorough mixing.	Acid base titration.	interactive-visual	Oral-written quiz-practical application
11	4	Accurately prepare the oxalic acid solution and standardize the potassium permanganate ($KMnO_4$) solution for use in the titration.	KMnO4 solution against oxalic acid.	interactive-visual	Oral-written quiz-practical application
12	4	Accurately prepare normal solutions by dissolving a specific amount of solute in a	Solutions, normal, molar etc	interactive-visual	Oral-written quiz-practical application

		known volume of solvent, using the concept of equivalent weight.			
13	4	Develop clear, fair, and well-structured test or quiz questions that effectively assess knowledge and understanding of the subject matter.	Test	interactive-visual	Oral-written quiz-practical application
14	4	Accurately prepare a buffer solution by mixing a weak acid with its conjugate base or a weak base with its conjugate acid, ensuring the correct concentrations.	Preparation of buffer solution.	interactive-visual	Oral-written quiz-practical application
15	4	Calibrate the pH meter using standard buffer solutions of known pH before measuring the pH of a sample.	PH determination.	interactive-visual	Oral-written quiz-practical application

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc **Daily exams: 10%** **Semester exams: 60%** **Preparing reports: 10%** **Discussions in practical: 20%**	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	General Chemistry, 3rd ed by Ebbing and D. Darrell
Main references (sources)	Brown, T.L., LeMay, H.E., Bursten, B.E., et al."Chemistry: The Central Science" Comprehensive coverage of fundamental chemistry concepts and problem-solving approaches.
Recommended books and references (scientific journals, reports…)	Tro, N.J. "Chemistry: A Molecular Approach" Connects macroscopic, molecular, and symbolic representations of chemistry topics.
Electronic References, Websites	Khan Academy – Chemistry Free lessons on topics like aton structure, reactions, a thermodynamics. https://www.khanacademy.org/scienc /chemistry