

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

| Module Information معلومات المادة الدراسية | | | | |
|---|---|-------------------------------|---|---|
| Module Title | Analytical Chemistry- quantitative analysis | | Module Delivery | |
| Module Type | Core | | <input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar | |
| Module Code | | | | |
| ECTS Credits | 8 | | | |
| SWL (hr/sem) | 200 | | | |
| Module Level | UGx11 1 | Semester of Delivery | | |
| Administering Department | Type Dept. Code | College | Type College Code | 1 |
| Module Leader | Ahmed Subhi Eaheea | e-mail | ahmeaheaheea@uoanbar.edu.iq | |
| Module Leader's Acad. Title | lecturer | Module Leader's Qualification | pH.D | |
| Module Tutor | Name (if available) | e-mail | E-mail | |
| Peer Reviewer Name | Name | e-mail | E-mail | |
| Scientific Committee Approval Date | 01/06/2023 | Version Number | 1.0 | |

| Relation with other Modules العلاقة مع المواد الدراسية الأخرى | | | |
|--|------|----------|--|
| Prerequisite module | None | Semester | |
| Co-requisites module | None | Semester | |

| Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية | |
|--|---|
| Module Objectives أهداف المادة الدراسية | <ol style="list-style-type: none"> The quantitative analysis methods course is determined according to the study plan prepared in the Applied Chemistry Department. The aim of the study is a comprehensive and clear definition of the basics of quantitative analytical chemistry Description of measurable compounds and substances in chemical units of concentration and weight Comprehensive knowledge of bases, acids and their theories |
| Module Learning Outcomes مخرجات التعلم للمادة الدراسية | <ol style="list-style-type: none"> That the student know the general concepts of compounds in the analytical chemistry curriculum. The student should be familiar with the basics and rules classification of analytical chemistry weight and concentration units The student should know the basic of Aqueous- solution in chemistry , solution of electrolytes and classification of electrolytes The student should know the of the Acid – base theory and Acid – base conjugated , amphiprotic species The student should know for Chemical equilibrium and types of equilibrium The student should understand for Solubility and solubility products constant, dissociation of a weak acid or base and hydrolysis constant |
| Indicative Contents المحتويات الإرشادية | <p>a- Methods of teaching and learning</p> <ol style="list-style-type: none"> Giving lectures. Using the method of recitation, discussion and solving questions. Giving assignments to students to strengthen them and prepare them for the final and final exams. <p>b- Evaluation methods</p> <ol style="list-style-type: none"> Daily and monthly exams |

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|--|--|
| | 2- Duties 3- In-class exercises |
| Learning and Teaching Strategies استراتيجيات التعلم والتعليم | |
| Strategies | Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students. |

| | | | |
|--|------------|---|----------|
| Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا | | | |
| Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل | 109 | Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا | 7 |
| Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل | 91 | Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا | 6 |
| Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل | 200 | | |

| | | | | | |
|---|------------------------|--------------------|-------------------------|-------------------|----------------------------------|
| Module Evaluation تقييم المادة الدراسية | | | | | |
| | As | Time/Number | Weight (Marks) | Week Due | Relevant Learning Outcome |
| Formative assessment | Quizzes | 2 | 10% (10) | 5 and 10 | LO #1, #2 and #10, #11 |
| | Assignments | 2 | 10% (10) | 2 and 12 | LO #3, #4 and #6, #7 |
| | Projects / Lab. | 1 | 10% (10) | Continuous | All |
| | Report | 1 | 10% (10) | 13 | LO #5, #8 and #10 |
| Summative assessment | Midterm Exam | 2hr | 10% (10) | 7 | LO #1 - #7 |
| | Final Exam | 3hr | 50% (50) | 16 | All |
| Total assessment | | | 100% (100 Marks) | | |

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| Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري | |
| Week | Material Covered |
| Week 1 | General Introduction , classification of analytical chemistry weight and concentration units |
| Week 2 | Method of expressing of concentration |
| Week 3 | Aqueous- solution in chemistry , solution of electrolytes and classification of electrolytes |
| Week 4 | Acid – base theory |
| Week 5 | Acid – base conjugated , amphiprotic species |
| Week 6 | Chemical equilibrium, types of equilibrium |
| Week 7 | Equilibrium constant (ionic- products constant of water(K_w)) |
| Week 8 | Solubility and solubility products constant, dissociation of a weak acid or base , hydrolysis constant (K_h) |
| Week 9 | Formation constant of complex , multistep equilibrium types, definitions, calculations |
| Week 10 | definitions, calculations and solve problems of equilibrium |
| Week 11 | Effect of common ion, effect of complex formation on solubility |
| Week 12 | Solve problems common ion and complex formation |
| Week 13 | Activity and activity coefficient: definitions, examples and calculations |
| Week 14 | Ionic strength : definitions, examples and calculations |
| Week 15 | Overall review of curriculum |
| Week 16 | Preparatory week before the final Exam |

| Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر | |
|--|--|
| Week | Material Covered |
| Week 1 | Lab 1: Introduction quantities analysis (WET reaction) |
| Week 2 | Lab 2: Reaction of group I (Ag+, Pb+2 , Hg-3) |
| Week 3 | Lab 3: separation of unknown solution |
| Week 4 | Lab 4: reaction of group II |
| Week 5 | Lab 5: reaction of group III |
| Week 6 | Lab 6: separation of unknown solution |
| Week 7 | Lab 7: reaction of group IV, group V and separation |

| Learning and Teaching Resources مصادر التعلم والتدريس | | |
|--|--|---------------------------|
| | Text | Available in the Library? |
| Required Texts | <ol style="list-style-type: none"> 1. Fundamentals of Analytical Chemistry by Douglas A. Skoog, Donald M. West, F. James Holler, Stanley R. Crouch (z-lib.org) 2. Quantitative Chemical Analysis (9th Edition) By Daniel C. Harris 3. Analytical Chemistry (6th Edition) by Gary D. Christian | Yes |
| Recommended Texts | NO | No |
| Websites | https://www.acs.org/careers/chemical-sciences/areas/analytical-chemistry.html | |

| Grading Scheme مخطط الدرجات | | | | |
|--------------------------------|------------------|---------------------|----------|---------------------------------------|
| Group | Grade | التقدير | Marks % | Definition |
| Success Group (50 - 100) | A - Excellent | امتياز | 90 - 100 | Outstanding Performance |
| | B - Very Good | جيد جدا | 80 - 89 | Above average with some errors |
| | C - Good | جيد | 70 - 79 | Sound work with notable errors |
| | D - Satisfactory | متوسط | 60 - 69 | Fair but with major shortcomings |
| | E - Sufficient | مقبول | 50 - 59 | Work meets minimum criteria |
| Fail Group (0 - 49) | FX – Fail | راسب (قيد المعالجة) | (45-49) | More work required but credit awarded |
| | F – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

| Module Information معلومات المادة الدراسية | | | | |
|---|---|-------------------------------|---|--|
| Module Title | Analytical Chemistry- volumetric analysis | | Module Delivery | |
| Module Type | Core | | <input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar | |
| Module Code | | | | |
| ECTS Credits | 8 | | | |
| SWL (hr/sem) | 200 | | | |
| Module Level | UGx11 1 | Semester of Delivery | | |
| Administering Department | Type Dept. Code | College | Type College Code | |
| Module Leader | Ahmed Subhi Eaheea | e-mail | ahmedeaheea@uoanbar.edu.iq | |
| Module Leader's Acad. Title | lecturer | Module Leader's Qualification | pH.D | |
| Module Tutor | Name (if available) | e-mail | E-mail | |
| Peer Reviewer Name | Name | e-mail | E-mail | |
| Scientific Committee Approval Date | 01/06/2023 | Version Number | 1.0 | |

| Relation with other Modules العلاقة مع المواد الدراسية الأخرى | | | |
|--|------|----------|--|
| Prerequisite module | None | Semester | |
| Co-requisites module | None | Semester | |

| Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية | |
|--|--|
| Module Objectives أهداف المادة الدراسية | <p>5. The volumetric analysis course is determined according to the study plan prepared in the Applied Chemistry Department.</p> <p>6. The aim of the study is a comprehensive and clear definition of the basics of Volumetric in analytical chemistry</p> <p>7. Description of measurable compounds and substances in chemical units pH</p> <p>8. Comprehensive knowledge of bases, acids titrations</p> |
| Module Learning Outcomes مخرجات التعلم للمادة الدراسية | <p>7- That the student know the general concepts of compounds in the volumetric analysis in analytical chemistry curriculum.</p> <p>8- The student should be familiar with the basics and rules Volumetric methods of analysis and requirements for a primer standard material</p> <p>9- The student should know the basic of Volumetric calculations for acid base titration and equilibriums in acid base solution</p> <p>10- The student should know the of the Calculation of pH of acid and base and pH of salts</p> <p>11- The student should know for Buffer solutions, Calculation of pH of Buffer solutions and buffer capacity</p> <p>12- The student should understand for Precipitation titration and Complexometric titration</p> |
| Indicative Contents المحتويات الإرشادية | <p>a- Methods of teaching and learning</p> <p>1- Giving lectures.</p> <p>2- Using the method of recitation, discussion and solving questions.</p> <p>3- Giving assignments to students to strengthen them and prepare them for the final and final exams.</p> <p>b- Evaluation methods</p> <p>1- Daily and monthly exams</p> <p>2- Duties</p> |

| | |
|--|--|
| | 3- In-class exercises |
| Learning and Teaching Strategies استراتيجيات التعلم والتعليم | |
| Strategies | Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students. |

| | | | |
|--|------------|---|----------|
| Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا | | | |
| Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل | 109 | Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا | 7 |
| Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل | 91 | Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا | 6 |
| Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل | 200 | | |

| | | | | | |
|---|------------------------|--------------------|-------------------------|-------------------|----------------------------------|
| Module Evaluation تقييم المادة الدراسية | | | | | |
| | As | Time/Number | Weight (Marks) | Week Due | Relevant Learning Outcome |
| Formative assessment | Quizzes | 2 | 10% (10) | 5 and 10 | LO #1, #2 and #10, #11 |
| | Assignments | 2 | 10% (10) | 2 and 12 | LO #3, #4 and #6, #7 |
| | Projects / Lab. | 1 | 10% (10) | Continuous | All |
| | Report | 1 | 10% (10) | 13 | LO #5, #8 and #10 |
| Summative assessment | Midterm Exam | 2hr | 10% (10) | 7 | LO #1 - #7 |
| | Final Exam | 3hr | 50% (50) | 16 | All |
| Total assessment | | | 100% (100 Marks) | | |

| | |
|---|---|
| Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري | |
| Week | Material Covered |
| Week 1 | Volumetric methods of analysis, requirements for a primer standard material , Volumetric calculations for acid base titration and equilibriums in acid base solution |
| Week 2 | Calculation of pH of acid and base |
| Week 3 | Calculation of pH of salts solutions |
| Week 4 | Salts deferential from strong acid and strong base & weak acid and strong base |
| Week 5 | Salts deferential from strong acid and weak base & weak acid and weak base |
| Week 6 | Buffer solutions |
| Week 7 | Calculation of pH of Buffer solutions and buffer capacity |
| Week 8 | Acid base titration , Acid base indicator |
| Week 9 | Theories of indicators |
| Week 10 | Titration curves of acid base (strong –weak) |
| Week 11 | Differential titration (titration mixture of two acid with one base and two base with one acid) |
| Week 12 | Calculation the concentration of pieces of weak acids in known pH <ul style="list-style-type: none"> • Monoprotic acids • Diprotic acids • Triprotic acids Titration of polyprotic acid |
| Week 13 | Precipitation titration |
| Week 14 | Complexometric titration |
| Week 15 | Overall review of curriculum |
| Week 16 | Preparatory week before the final Exam |

| Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر | |
|--|--|
| Week | Material Covered |
| Week 1 | Lab 1: Introduction to volumetric analysis |
| Week 2 | Lab 2: preparation approximately (0.1N) HCl and (0.1N) sodium carbonate |
| Week 3 | Lab 3: standardization of HCl with standard solution of sodium carbonate |
| Week 4 | Lab 4: standardization of NaOH with standard solution of HCl |
| Week 5 | Lab 5: analysis of mixture (NaOH +Na ₂ CO ₃) |
| Week 6 | Lab 6: determination of chloride ion by Mohr method |
| Week 7 | Lab 7: determination of total hardness of water |

| Learning and Teaching Resources مصادر التعلم والتدريس | | |
|--|--|---------------------------|
| | Text | Available in the Library? |
| Required Texts | 4. Fundamentals of Analytical Chemistry by Douglas A. Skoog, Donald M. West, F. James Holler, Stanley R. Crouch (z-lib.org) 5. Quantitative Chemical Analysis (9th Edition) By Daniel C. Harris 6. Analytical Chemistry (6th Edition) by Gary D. Christian | Yes |
| Recommended Texts | NO | No |
| Websites | https://www.acs.org/careers/chemical-sciences/areas/analytical-chemistry.html | |

| Grading Scheme مخطط الدرجات | | | | |
|--------------------------------|------------------|---------------------|----------|---------------------------------------|
| Group | Grade | التقدير | Marks % | Definition |
| Success Group (50 - 100) | A - Excellent | امتياز | 90 - 100 | Outstanding Performance |
| | B - Very Good | جيد جدا | 80 - 89 | Above average with some errors |
| | C - Good | جيد | 70 - 79 | Sound work with notable errors |
| | D - Satisfactory | متوسط | 60 - 69 | Fair but with major shortcomings |
| | E - Sufficient | مقبول | 50 - 59 | Work meets minimum criteria |
| Fail Group (0 - 49) | FX – Fail | راسب (فيد المعالجة) | (45-49) | More work required but credit awarded |
| | F – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

| Module Information معلومات المادة الدراسية | | | |
|---|----------------------------------|-------------------------------|--|
| Module Title | Inorganic Chemistry | | Module Delivery |
| Module Type | Course (1 st course) | | <input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar |
| Module Code | 7.00 | | |
| ECTS Credits | 8 | | |
| SWL (hr/sem) | 175 | | |
| Module Level | UGx1 1 | Semester of Delivery | |
| Administering Department | Univ. of Anbar | College | College of science |
| Module Leader | Dr. Sattar Salim Ibrahim | e-mail | Sattar_salim1976@yahoo.com |
| Module Leader's Acad. Title | Asst. Prof. | Module Leader's Qualification | Ph.D. |
| Module Tutor | Name (if available) | e-mail | |
| Peer Reviewer Name | Name | e-mail | |
| Scientific Committee Approval Date | 01/06/2023 | Version Number | 1.0 |

| Relation with other Modules العلاقة مع المواد الدراسية الأخرى | | | |
|--|------|----------|--|
| Prerequisite module | None | Semester | |
| Co-requisites module | None | Semester | |

| Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية | |
|--|---|
| Module Objectives أهداف المادة الدراسية | The objectives of this course is to introduce the student to the basics of fundamental concepts in inorganic Chemistry. At the end of this course the student will be know what mean atomic structure, natural of radiation, electromagnetic radiation, wave natural, energy levels , orbital d,p, determine shielding symbol for atom have more than electron ,some period properties , ionic bond, structure of covalent molecule . molecular orbitals, VB theory, VSEPR theory. |
| Module Learning Outcomes مخرجات التعلم للمادة الدراسية | <ul style="list-style-type: none"> - Give an idea to the student about the atomic structure of the elements and an explanation of quantum theory - Knowledge of the nature of radiation and types of spectra Atomic in addition to the study of the linear spectrum radiation emitted by hydrogen gas. - Use four quantum numbers to describe energy of Electron. - Determining the total energy of the main shell in which the electron rotates, as well as determining the shape of the secondary shells within the main shell, determining the orbital direction towards the magnetic field and the direction of the electron's rotation around itself, in addition to the most stable electronic arrangement in the atom. - Introducing students to the periodic table and its contents Of the elements and its subdivisions in addition to his education <p align="center">Term codes</p> |
| Indicative Contents المحتويات الإرشادية | <p align="center">Indicative content includes the following.</p> <ul style="list-style-type: none"> - Deduce the geometric shape of the molecules of any compound from compounds to major components through Introducing the student to the rules of space chemistry for the non-transition element. |

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| | <ul style="list-style-type: none"> - The possibility of studying electronic structures and the bonding properties of diatomic molecules heterogeneous - Evaluation of the student and the extent to which he benefited from it Lectures and scientific potential |
|--|--|

| Learning and Teaching Strategies استراتيجيات التعلم والتعليم | |
|---|---|
| Strategies | The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials . |

| Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا | | | |
|---|-----|--|--|
| Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل | 109 | Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا | |
| Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل | 91 | Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا | |
| Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل | 200 | | |

| Module Evaluation تقييم المادة الدراسية | | | | | |
|--|-----------------|-------------|------------------|----------|---------------------------|
| As | | Time/Number | Weight (Marks) | Week Due | Relevant Learning Outcome |
| Formative assessment | Quizzes | 2 | 10% (10) | 5 and 10 | LO #1, #2 and #10, #11 |
| | Assignments | 2 | 10% (10) | 2 and 12 | LO #3, #4 and #6, #7 |
| | Projects / Lab. | 1 | 10% (10) | | |
| | Report | 1 | 10% (10) | 13 | LO #5, #8 and #10 |
| Summative assessment | Midterm Exam | 2hr | 10% (10) | 14 | LO #1 - #14 |
| | Final Exam | 3hr | 50% (50) | 16 | All |
| Total assessment | | | 100% (100 Marks) | | |

| Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري | |
|--|---|
| Week | Material Covered |
| Week 1 | Atomic electron structure |
| Week 2 | Origin of quantum theory |
| Week 3 | Electromagnetic radiation – Radiation of black body |
| Week 4 | Photo electric effect |
| Week 5 | Atomic spectra – Line spectrum of H – Bohr theory |
| Week 6 | Summerfield theory – Zeman effect – Electron spin effect |
| Week 7 | The basic principle of wave mechanic |
| Week 8 | First exam |
| Week 9 | Heisenberg's uncertainly principle |
| Week 10 | Schrodinger equation |
| Week 11 | Quantum numbers |
| Week 12 | The term symbols |
| Week 13 | Periodic tables of elements |
| Week 14 | Anomalies in the electronic arrangement and properties of periodic tables |
| Week 15 | Second exam |

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| Week 16 | Preparatory week before the final Exam |
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| Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر | |
|--|------------------|
| Week | Material Covered |
| Week 1 | |
| Week 2 | |
| Week 3 | |
| Week 4 | |
| Week 5 | |
| Week 6 | |
| Week 7 | |

| Learning and Teaching Resources مصادر التعلم والتدريس | | |
|--|---|---------------------------|
| | Text | Available in the Library? |
| Required Texts | 1- Inorganic chemistry by Dr. Thana Al- Hasani 2- Inorganic chemistry, principles of structure and reactivity, 2nd ed., James E. Huheey, 1983 3- Inorganic chemistry, 3rd ed., Housecroft C.E. and Sharpe A.G., 2008. | Yes |
| Recommended Texts | No | No |
| Websites | http://rapidshare.de/files/20322418/Patnaik_P_Handbook_of_inorganic_chemicals_McGraw_Hill_2003 | |

| Grading Scheme مخطط الدرجات | | | | |
|--------------------------------|------------------|---------------------|----------|---------------------------------------|
| Group | Grade | التقدير | Marks % | Definition |
| Success Group (50 - 100) | A - Excellent | امتياز | 90 - 100 | Outstanding Performance |
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| Module Information معلومات المادة الدراسية | | | |
|---|----------------------------------|-------------------------------|--|
| Module Title | Inorganic Chemistry | | Module Delivery |
| Module Type | Course (2 nd course) | | <input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar |
| Module Code | 7.00 | | |
| ECTS Credits | 8 | | |
| SWL (hr/sem) | 175 | | |
| Module Level | UGx11 1 | Semester of Delivery | |
| Administering Department | Univ. of Anbar | College | College of science |
| Module Leader | Dr. Sattar Salim Ibrahim | e-mail | sattar_salim1976@yahoo.com |
| Module Leader's Acad. Title | Asst. Prof. | Module Leader's Qualification | Ph.D. |
| Module Tutor | Name (if available) | e-mail | |
| Peer Reviewer Name | Name | e-mail | |
| Scientific Committee Approval Date | 01/06/2023 | Version Number | 1.0 |

| Relation with other Modules العلاقة مع المواد الدراسية الأخرى | | | |
|--|------|----------|--|
| Prerequisite module | None | Semester | |
| Co-requisites module | None | Semester | |

| Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية | |
|--|---|
| Module Objectives أهداف المادة الدراسية | The objectives of this course is to introduce the student to the basics of fundamental concepts in inorganic Chemistry. At the end of this course the student will be know what mean atomic structure, natural of radiation, electromagnetic radiation, wave natural, energy levels , orbital d,p, determine shielding symbol for atom have more than electron ,some period properties , ionic bond, structure of covalent molecule . molecular orbitals, VB theory, VSEPR theory. |
| Module Learning Outcomes مخرجات التعلم للمادة الدراسية | <ul style="list-style-type: none"> - Introducing the student to molecular hybridization and giving him an idea of geometric shapes <ul style="list-style-type: none"> - Deduce the geometric shape of the molecules of any compound - From compounds to major components through Introducing the student to the rules of space chemistry for the non-transition element - Give a simplified idea of some properties the physical elements that can be taken as a basis for arriving at the chemical behavior of these elements depending on their positions in the table. <ul style="list-style-type: none"> - Introducing students to the hydrogen atom and its compounds and their interactions Hydrogen - isotopes of hydrogen - its compounds And prepare it. - Evaluation of the student and the extent to which he benefited from it Lectures and scientific potential. |
| Indicative Contents المحتويات الإرشادية | <p align="center">Indicative content includes the following.</p> <ul style="list-style-type: none"> - Deduce the geometric shape of the molecules of any compound from compounds to major components through Introducing the student to the rules of space chemistry for the non-transition element. - The possibility of studying electronic structures and the bonding |

| | |
|--|---|
| | <p>properties of diatomic molecules heterogeneous</p> <p>- Evaluation of the student and the extent to which he benefited from it Lectures and scientific potential</p> |
|--|---|

| Learning and Teaching Strategies استراتيجيات التعلم والتعليم | |
|---|---|
| Strategies | The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials . |

| Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا | | | |
|---|-----|--|--|
| Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل | 109 | Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا | |
| Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل | 91 | Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا | |
| Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل | 200 | | |

| Module Evaluation تقييم المادة الدراسية | | | | | |
|--|-----------------|-------------|------------------|----------|---------------------------|
| As | | Time/Number | Weight (Marks) | Week Due | Relevant Learning Outcome |
| Formative assessment | Quizzes | 2 | 10% (10) | 5 and 10 | LO #1, #2 and #10, #11 |
| | Assignments | 2 | 10% (10) | 2 and 12 | LO #3, #4 and #6, #7 |
| | Projects / Lab. | 1 | 10% (10) | | |
| | Report | 1 | 10% (10) | 13 | LO #5, #8 and #10 |
| Summative assessment | Midterm Exam | 2hr | 10% (10) | 14 | LO #1 - #14 |
| | Final Exam | 3hr | 50% (50) | 16 | All |
| Total assessment | | | 100% (100 Marks) | | |

| Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري | |
|--|---|
| Week | Material Covered |
| Week 1 | Ionic compounds (properties and conditions of formation of ionic compounds) |
| Week 2 | Crystal lattice energy – Born lande equation |
| Week 3 | Born – Haber cycle – polarization of ionic compound – dissolving of ionic compound – structure of ionic compounds |
| Week 4 | Baraveas lattice – packing of bools – Coordination number |
| Week 5 | Types of crystals – properties of NaCl, CsCl and TiO ₂ crystals. |
| Week 6 | First exam |
| Week 7 | Covalent bond and its properties |
| Week 8 | The theory of covalent bond formation (VBT and MOT) |
| Week 9 | Idea of interaction and force of bond – The symmetry in atomic orbitals |
| Week 10 | Hybridization |
| Week 11 | Hydrogen (properties, isotopes, formation, its compounds , preparation, the bond of hydrogen and the hydrides and its verities |
| Week 12 | The first and second groups |
| Week 13 | The third groups |
| Week 14 | The fourth groups |

| | |
|---------|--|
| Week 15 | Second exam |
| Week 16 | Preparatory week before the final Exam |

| Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر | |
|--|------------------|
| Week | Material Covered |
| Week 1 | |
| Week 2 | |
| Week 3 | |
| Week 4 | |
| Week 5 | |
| Week 6 | |
| Week 7 | |

| Learning and Teaching Resources مصادر التعلم والتدريس | | |
|--|---|---------------------------|
| | Text | Available in the Library? |
| Required Texts | 2- Inorganic chemistry by Dr. Thana Al- Hasani 2- Inorganic chemistry, principles of structure and reactivity, 2nd ed., James E. Huheey, 1983 3- Inorganic chemistry, 3rd ed., Housecroft C.E. and Sharpe A.G., 2008. | Yes |
| Recommended Texts | No | No |
| Websites | http://rapidshare.de/files/20322418/Patnaik_P._Handbook_of_inorganic_chemicals_McGraw_Hill_2003 | |

| Grading Scheme مخطط الدرجات | | | | |
|--------------------------------|------------------|---------------------|----------|---------------------------------------|
| Group | Grade | التقدير | Marks % | Definition |
| Success Group (50 - 100) | A - Excellent | امتياز | 90 - 100 | Outstanding Performance |
| | B - Very Good | جيد جدا | 80 - 89 | Above average with some errors |
| | C - Good | جيد | 70 - 79 | Sound work with notable errors |
| | D - Satisfactory | متوسط | 60 - 69 | Fair but with major shortcomings |
| | E - Sufficient | مقبول | 50 - 59 | Work meets minimum criteria |
| Fail Group (0 - 49) | FX - Fail | راسب (قيد المعالجة) | (45-49) | More work required but credit awarded |
| | F - Fail | راسب | (0-44) | Considerable amount of work required |

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.