

جامعة الزيتونة الأردنية

Al–Zaytoonah University of Jordan



كلية العلوم وتكنولوجيا المعلومات

Faculty of Sciences and Information Technology

" عراقة وجودة" "Tradition and Quality"

| Brief course description- Course Plan Development and Updating Procedures\ Mathematics Department | | | | Q | PF01/0409-3.0E |
|--|--------------|---------------------|-----------|-----|----------------|
| | | | | | |
| | Sciences and | | | | |
| Faculty | Information | Academic Department | Mathemati | ics | Number of the |

| Faculty | Inform | nation | Academic Department | Mathe | matics | Number of the |
|-------------------|--------------|--------|-----------------------|-------|-----------|-------------------|
| | Techn | ology | | | | course plan |
| Number of Major | 1 | 5 | Date of plan approval | | | (2021-2022) |
| requirement cours | es 1 | 5 | Date of plan approval | | | |
| | | | | | | |
| Course number | Credit hours | | Title of the course | | Prerequis | site-co-requisite |

| Course number | Cicuit nouis | The of the course | Therequisite=co-requisite | | |
|---|---|--|-------------------------------|--|--|
| 0101711 | 3 | Real Analysis | None | | |
| Outer measure, measurable sets and Lebesgue measure. Measurable functions. Lebesgue integral, integral of a | | | | | |
| nonnegative functi | nonnegative function, general Lebesgue integral, convergence in measure. Differentiation and integration, | | | | |
| differentiation of monotone functions. The L ^P spaces, Holder and Minkowski inequalities. | | | | | |
| Course number | Credit hours | Title of the course | Prerequisite-co-requisite | | |
| 0101712 | 3 | Functional Analysis | None | | |
| Metric spaces, con | npact sets in me | tric spaces, normed spaces, finite dimensional no | ormed spaces, complete and | | |
| separable normed | spaces, Banach | spaces. Inner product spaces, Hilbert spaces, o | orthogonal and orthonormal | | |
| system, separable | Hilbert spaces, | and Parseval's equality, Riesz representation for | r linear functionals. Linear | | |
| operators, bounded | linear operators | , continuity linear operators, algebraic dual, Hahn- | Banach theorems. | | |
| Course number | Credit hours | Title of the course | Prerequisite-co-requisite | | |
| 0101713 | 3 | Complex Analysis | 0101711 | | |
| Analytic function | ns, power ser | ries, Laurent series, Mobius transformation | ns, complex integration, | | |
| Cauchy's theorem | n and formula, | , the maximum modulus principle, Schwartz | lemma, singularities and | | |
| classification of | singularities, H | Riemann mapping theorem, Schwartz-Christ | ofell formulas, harmonic | | |
| functions, Dirichl | et problem, Poi | isson's formula. | | | |
| Course number | Credit hours | Title of the course | Prerequisite-co-requisite | | |
| 0101714 | 3 | Mathematical Optimization | None | | |
| Linear programming | ng and mathem | atical modeling, the simplex method, duality, | convexity, constrained and | | |
| unconstrained non | linear programi | ning problems, Lagrange multipliers, Kuhn-Tu | icker conditions, quadratic | | |
| programming. | | | | | |
| Course number | Credit hours | Title of the course | Prerequisite-co-requisite | | |
| 0101721 | 3 | Abstract Algebra (1) | None | | |
| Isomorphism theor | ems of groups, g | group automorphism, finite direct products, finite | ly generated groups, groups | | |
| actions, Sylow the | orems, rings and | l ideals, prime and maximal ideals, polynomial | rings and irreducibity tests, | | |
| unique factorization | n domains, Eucli | dean domains. | | | |
| Course number | Credit hours | Title of the course | Prerequisite-co-requisite | | |
| 0101722 | 3 | Abstract Algebra (2) | 0101721 | | |
| Rings and ideals, | Rings and ideals, nilpotents and idempotents in rings, R-modules, products and sums of R-modules, exact | | | | |
| sequences and split exact sequences, simple and semisimple R-modules, essential and small submodules, the ring | | | | | |
| of endomorphisms of an R-modules, projective and injective modules, regular rings, the radical and the socle of | | | | | |
| an R-module, Noetherian and Artinian R-modules. | | | | | |
| Course number | Credit hours | Title of the course | Prerequisite-co-requisite | | |
| 0101731 | 3 | Topology (1) | None | | |
| Topological spaces, neighborhoods, bases and subbases, continuous functions, product spaces, weak topologies, | | | | | |
| quotient spaces, filters, separation axioms, regular and completely regular spaces, normal and perfectly normal | | | | | |
| spaces, Lindelof, separable spaces and second countable spaces, compact spaces, locally compact spaces, | | | | | |
| sequentially and countably compact spaces, one point compactification, paracompact spaces, connected spaces. | | | | | |
| Course number | Cradit hours | Title of the course | Drana quinita ao raquinita | | |
| | Clean nouis | The of the course | Prerequisite-co-requisite | | |



جامعة الزيتونة الأردنية

Al-Zaytoonah University of Jordan



كلية العلوم وتكنولوجيا المعلومات

Faculty of Sciences and Information Technology

" عراقة وجودة" "Tradition and Quality"

| Brief course description- Course Plan Development and Updating Procedures\ Mathematics Department | QF01/0409-3.0E |
|--|----------------|
| | |

| Locally compact and K-Spaces, Cech complete spaces, metric and metrizable spaces, complete metric spaces and | | | | |
|--|--|---|--|--|
| the completion theorem, Baire spaces and Baire category theorem, uniform and proximity spaces. | | | | |
| Course number | Credit hours | Title of the course | Prerequisite-co-requisite | |
| 0101741 | 3 | Applied Mathematics (1) | None | |
| Review of ODEs, | existence and un | niqueness of solutions for ODEs, integral transfer | orms, and Green's function, | |
| approximation met | hods, non-linear | ODEs and their stability. | | |
| Course number | Credit hours | Title of the course | Prerequisite-co-requisite | |
| 0101742 | 3 | Applied Mathematics (2) | 0101741 | |
| PDEs of mathem | atical physics, | separation of variables, transform methods, e | eigen function expansions, | |
| Green's function, | approximation | methods, integral equations. | | |
| Course number | Credit hours | Title of the course | Prerequisite-co-requisite | |
| 0101744 | 3 | Advanced Numerical Analysis | None | |
| Data fitting (poly | nomial interpola | ation, least squares method), numerical method | ls for ordinary and partial | |
| differential equation | ons (Euler, Ru | nge-Kutta formulas, boundary value problems, | finite difference methods), | |
| numerical linear A | lgebra (LU, Cho | plesky, QR and singular value decompositions), | eigenvalue problem (power | |
| method, Lanczos al | gorithm). | | | |
| Course number | Credit hours | Title of the course | Prerequisite-co-requisite | |
| | | | None | |
| 0101751 | 3 | Mathematical Statistics | None | |
| 0101751 Univariate and mu | 3 Itivariate distrib | Mathematical Statistics ution theory, sufficient statistics, minimal sufficient | None ent statistics, completeness, | |
| 0101751 Univariate and mu methods of point es | 3 Itivariate distrib stimation and pro | Mathematical Statistics ution theory, sufficient statistics, minimal suffici- operties of point estimators, confidence, intervals, | None ent statistics, completeness, testing hypotheses, Neman- | |
| 0101751 Univariate and mu methods of point es Pearson lemma, rar | 3 Itivariate distrib stimation and pro- adomized tests, u | Mathematical Statistics ution theory, sufficient statistics, minimal suffici- operties of point estimators, confidence, intervals, uniformly most powerful test, likelihood ratio tests | None ent statistics, completeness, testing hypotheses, Neman- , minimax methods. | |
| 0101751 Univariate and mu methods of point es Pearson lemma, rar Course number | 3 Itivariate distrib stimation and pro adomized tests, u Credit hours | Mathematical Statistics ution theory, sufficient statistics, minimal suffice operties of point estimators, confidence, intervals, iniformly most powerful test, likelihood ratio tests Title of the course | None ent statistics, completeness, testing hypotheses, Neman- , minimax methods. Prerequisite-co-requisite | |
| 0101751 Univariate and mu methods of point es Pearson lemma, rar Course number 0101752 | 3 Itivariate distrib stimation and pro- adomized tests, u Credit hours 3 | Mathematical Statistics ution theory, sufficient statistics, minimal sufficient operties of point estimators, confidence, intervals, uniformly most powerful test, likelihood ratio tests Title of the course Probability Theory | None ient statistics, completeness, testing hypotheses, Neman- , minimax methods. Prerequisite-co-requisite None | |
| 0101751 Univariate and mu methods of point es Pearson lemma, rar Course number 0101752 Kolmogorrov's axis | 3 Itivariate distrib stimation and pro- adomized tests, u Credit hours 3 oms, random van | Mathematical Statistics ution theory, sufficient statistics, minimal sufficient operties of point estimators, confidence, intervals, uniformly most powerful test, likelihood ratio tests Title of the course Probability Theory riables, distributions, expected values, conditional | None ent statistics, completeness, testing hypotheses, Neman- , minimax methods. Prerequisite-co-requisite None l probability, independence, | |
| 0101751 Univariate and mu methods of point ex Pearson lemma, rar Course number 0101752 Kolmogorrov's axie Borel-Cantelli lem | 3 Itivariate distrib stimation and pro- adomized tests, u Credit hours 3 oms, random van ma, characterist | Mathematical Statistics ution theory, sufficient statistics, minimal sufficiency operties of point estimators, confidence, intervals, iniformly most powerful test, likelihood ratio tests Title of the course Probability Theory riables, distributions, expected values, conditional tic functions and inversion formula, convergent | None ent statistics, completeness, testing hypotheses, Neman- , minimax methods. Prerequisite-co-requisite None l probability, independence, ce concepts, laws of large | |
| 0101751 Univariate and mu methods of point es Pearson lemma, rar Course number 0101752 Kolmogorrov's axie Borel-Cantelli lem numbers, central lin | 3 Itivariate distrib stimation and pro- adomized tests, u Credit hours 3 oms, random vai ma, characterist nit theorems. | Mathematical Statistics ution theory, sufficient statistics, minimal sufficiency operties of point estimators, confidence, intervals, informly most powerful test, likelihood ratio tests Title of the course Probability Theory riables, distributions, expected values, conditionatic functions and inversion formula, convergen | None ient statistics, completeness, testing hypotheses, Neman- , minimax methods. Prerequisite-co-requisite None I probability, independence, ce concepts, laws of large | |
| 0101751 Univariate and mu methods of point en Pearson lemma, ran Course number 0101752 Kolmogorrov's axia Borel-Cantelli lem numbers, central lin Course number | 3 Itivariate distrib stimation and pro- adomized tests, u Credit hours 3 oms, random van ma, characterist nit theorems. Credit hours | Mathematical Statistics ution theory, sufficient statistics, minimal sufficiency operties of point estimators, confidence, intervals, uniformly most powerful test, likelihood ratio tests Title of the course Probability Theory riables, distributions, expected values, conditionatic functions and inversion formula, convergen Title of the course Title of the course | None ient statistics, completeness, testing hypotheses, Neman- , minimax methods. Prerequisite-co-requisite None l probability, independence, ce concepts, laws of large Prerequisite-co-requisite | |
| 0101751 Univariate and mu methods of point en Pearson lemma, ran Course number 0101752 Kolmogorrov's axie Borel-Cantelli lem numbers, central lin Course number 0101771 | 3 Itivariate distrib stimation and pro- adomized tests, u Credit hours 3 oms, random van ma, characterist nit theorems. Credit hours 3 | Mathematical Statistics ution theory, sufficient statistics, minimal sufficient poperties of point estimators, confidence, intervals, uniformly most powerful test, likelihood ratio tests Title of the course Probability Theory riables, distributions, expected values, conditionation formula, convergen Title of the course Title of the course Selected Topics in Mathematics | None ent statistics, completeness, testing hypotheses, Neman- , minimax methods. Prerequisite-co-requisite None I probability, independence, ce concepts, laws of large Prerequisite-co-requisite None | |
| 0101751 Univariate and mu methods of point es Pearson lemma, rar Olurse number 0101752 Kolmogorrov's axid Borel-Cantelli lem numbers, central lin Course number 0101771 Study of selected a | 3 Itivariate distrib stimation and pro- adomized tests, u Credit hours 3 oms, random vai ma, characterist mit theorems. Credit hours 3 reas in mathemat | Mathematical Statistics ution theory, sufficient statistics, minimal sufficient operties of point estimators, confidence, intervals, informly most powerful test, likelihood ratio tests Title of the course Probability Theory riables, distributions, expected values, conditionatic ic functions and inversion formula, convergent Title of the course Selected Topics in Mathematics tics. Designed for special needs of advanced stude | None ient statistics, completeness, testing hypotheses, Neman- , minimax methods. Prerequisite-co-requisite None I probability, independence, ce concepts, laws of large Prerequisite-co-requisite None nts. | |
| 0101751 Univariate and mu methods of point en Pearson lemma, ran Course number 0101752 Kolmogorrov's axid Borel-Cantelli lem numbers, central lin Course number 0101771 Study of selected an Course number | 3 Itivariate distrib stimation and pro- adomized tests, u Credit hours 3 oms, random van ma, characterist nit theorems. Credit hours 3 reas in mathemat Credit hours | Mathematical Statistics ution theory, sufficient statistics, minimal sufficient operties of point estimators, confidence, intervals, uniformly most powerful test, likelihood ratio tests Title of the course Probability Theory riables, distributions, expected values, conditionatic tic functions and inversion formula, convergen Title of the course Selected Topics in Mathematics tics. Designed for special needs of advanced stude Title of the course | None ient statistics, completeness, testing hypotheses, Neman- , minimax methods. Prerequisite-co-requisite None l probability, independence, ce concepts, laws of large Prerequisite-co-requisite None ents. Prerequisite-co-requisite | |
| 0101751 Univariate and mu methods of point en Pearson lemma, ran Course number 0101752 Kolmogorrov's axis Borel-Cantelli lem numbers, central lin Course number 0101771 Study of selected an Course number 0101772 | 3 Itivariate distrib stimation and pro- adomized tests, u Credit hours 3 oms, random van ma, characterist nit theorems. Credit hours 3 reas in mathemat Credit hours 3 | Mathematical Statistics ution theory, sufficient statistics, minimal sufficient poperties of point estimators, confidence, intervals, uniformly most powerful test, likelihood ratio tests Title of the course Probability Theory riables, distributions, expected values, conditionatic functions and inversion formula, convergen Title of the course Selected Topics in Mathematics tics. Designed for special needs of advanced stude Title of the course Scientific Research Methodology | None ent statistics, completeness, testing hypotheses, Neman- , minimax methods. Prerequisite-co-requisite None l probability, independence, ce concepts, laws of large Prerequisite-co-requisite None ents. Prerequisite-co-requisite None | |
| 0101751 Univariate and mu methods of point es Pearson lemma, rar Olurse number 0101752 Kolmogorrov's axid Borel-Cantelli lem numbers, central lin Course number 0101771 Study of selected an Course number 0101772 The course aims to | 3 Itivariate distrib stimation and pro- adomized tests, u Credit hours 3 oms, random vai ma, characterist mit theorems. Credit hours 3 reas in mathemat Credit hours 3 o provide in-dep | Mathematical Statistics ution theory, sufficient statistics, minimal sufficient operties of point estimators, confidence, intervals, informly most powerful test, likelihood ratio tests Title of the course Probability Theory riables, distributions, expected values, conditionatic tic functions and inversion formula, convergent Selected Topics in Mathematics tics. Designed for special needs of advanced stude Title of the course Scientific Research Methodology oth knowledge of research design and methodology | None ient statistics, completeness, testing hypotheses, Neman- , minimax methods. Prerequisite-co-requisite None l probability, independence, ce concepts, laws of large Prerequisite-co-requisite None ents. Prerequisite-co-requisite None ogy and train the student in | |
| 0101751 Univariate and mu methods of point en Pearson lemma, ran Ourse number 0101752 Kolmogorrov's axid Borel-Cantelli lem numbers, central lin Course number 0101771 Study of selected an Course number 0101772 The course aims to writing a study plan | 3 Itivariate distrib stimation and pro- adomized tests, u Credit hours 3 oms, random var ma, characterist nit theorems. Credit hours 3 reas in mathemat Credit hours 3 o provide in-dep and critically re | Mathematical Statistics ution theory, sufficient statistics, minimal sufficient poperties of point estimators, confidence, intervals, uniformly most powerful test, likelihood ratio tests Title of the course Probability Theory riables, distributions, expected values, conditionatic functions and inversion formula, convergenties Selected Topics in Mathematics tics. Designed for special needs of advanced stude Title of the course Scientific Research Methodology oth knowledge of research design and methodole | None ent statistics, completeness, testing hypotheses, Neman- , minimax methods. Prerequisite-co-requisite None l probability, independence, ce concepts, laws of large Prerequisite-co-requisite None ents. Prerequisite-co-requisite ogy and train the student in | |

| Approved by | 18- | Date of approval | 2021/8/12 |
|--------------------|-----|------------------|-----------|
| department council | | | |
| | | | |
| | | | |
| | | | |