Post Graduate Courses and PhD Program at Digital University Kerala

Admission process

M.Sc. and MBA:

Applicants for both Master of Science (M.Sc.) and Master of Business Administration (MBA) programs must take one of the following entrance exams:

- **Digital University Admission Test (DUAT-2024)** conducted by Digital University Kerala.
- **Central Universities Entrance Test (CUET(PG)-2024)** conducted by NTA for admission to various postgraduate programs.

M.Tech.:

Admission to M.Tech. programs may involve two options:

1. **National Level Exams:** Applicants can take either the **CUET(PG)-2024** exam or the **Graduate Aptitude Test in Engineering (GATE)** exam.
2. **School-Specific Admission Procedure:** M.Tech. program also have school-specific admission procedures instead of CUET(PG)/GATE exams.

MBA (Alternative Option):

For MBA programs only, applicants with a valid score in one of the following national-level management entrance exams can also be considered for admission:

- CAT (Common Admission Test) conducted by IIMs
- GRE (Graduate Record Examinations)
- CMAT (Central Management Admission Test)
- KMAT (Kerala Management Aptitude Test)
- XAT (Xavier Aptitude Test)
- NMAT by GMAC (Graduate Management Admission Council) / GMAT

Applicants who qualify through these exams will be shortlisted for a group discussion followed by an interview.

Ph.D.:

Admission to the Ph.D. program requires appearing for the Digital University Research Aptitude Test. However, applicants holding a valid NET score are exempt from taking DRAT. The shortlisted candidate will be called for an interview.

How to Apply Online

Application portal: https://duk.ac.in/admission/apply/

Step 1: Registration

- Provide your Name, Email Id, Mobile number, and the Program/Group you are applying for.
- An email containing login credentials will be sent to the provided email address.
- Use the credentials to log in and proceed to complete the application.

Step 2: Application Details

- Complete the online application, saving your progress after each step.

Step 3: Document Upload

- Candidates must have scanned copies of their photograph, signature, and necessary documents. (Photo of Signature, Photo and Scanned Copy of any ID Card are mandatory)
- Upload the scanned documents as part of the application process.

Step 4: Application Fee Payment

- The final step involves the payment of the application fee.
- Upon successful payment, the application will be automatically submitted, and a confirmation email with a copy of the application will be sent to you.

Important Notes:

- All information provided should be true and accurate.
- University decisions based on this data are provisional and subject to verification during the selection process.
- Failure to meet eligibility criteria or the discovery of false information at any stage may result in the cancellation of candidature and forfeiture of any offers made.
- Candidates who wish to apply to more than one program group, such candidates need to submit different applications for different groups of programs by creating separate accounts with same or different email addresses. For eg: MSc in Computer Science group includes MSc Computer Science with specialization in Cyber Security, MSc Computer Science with specialization in Machine Intelligence and MSc Computer Science with specialization in Data Analytics

Application Fee

Application Fee for PG programs through DUAT is Rs. 750/-. For SC/ST/Divyaang, it is Rs. 375/-

Application Fee for PG programs for CUET(PG) candidates is Rs. 100/-. For SC/ST/Divyaang, it is Rs. 50/-.

Application fee once remitted is not refundable under any circumstances.

Important Dates

DUK application portal opens for registration: 15th Jan, 2024

Last date to submit the application: 15th May 2024

DUAT Exam (tentative): 1st June 2024

Test Paper Codes

Degree	Programme	CUET-PG Test Paper Code	DUAT Test Paper Code
M.Tech.	Computer Science and Engineering	MTQP04	NA
M.Sc.	Computer Science with specialization in Cybersecurity	SCQP09	DUAT02
M.Sc.	Computer Science with specialization in Machine Intelligence	SCQP09	DUAT02
M.Sc.	Computer Science with specialization in Data Analytics	SCQP09, SCQP27, SCQP19, SCQP24	DUAT02
M.Sc.	Data Analytics & Bio-AI	SCQP09, SCQP17	DUAT05
M.Sc.	Data Analytics & Computational Science	SCQP09, SCQP27, SCQP19, SCQP24	DUAT02
M.Sc.	Data Analytics & Geoinformatics	SCQP09, SCQP14, SCQP15, SCQP11, SCQP26, SCQP27	DUAT06
M.Tech.	Electronics Engineering	MTQP05, MTQP09	NA
M.Tech.	Electronic Product Design	MTQP05, MTQP08	NA
M.Sc.	Electronics	SCQP18, SCQP24	DUAT03
M.Sc.	Applied Physics	SCQP18, SCQP24	DUAT03
MBA	Business Administration	COQP12	DUAT01

M.Sc.	Ecology with specialization in Ecological Informatics	SCQP01, SCQP07, SCQP08, SCQP11, SCQP14, SCQP17, SCQP19, SCQP24, SCQP27, SCQP28	DUAT04
M.Sc.	Informatics (Master's Program in Digital Leadership and Transformation)	All test codes except Acharya	DUAT01

Mode of Conduct of DUAT

The examination will be administered online and proctored by AI technology and human invigilators. You must login using a laptop or desktop computer equipped with a webcam and connected to the internet. The test consists of 60 questions to be completed within a total duration of 60 minutes.

DUAT-2024 Syllabus

Test Code: DUAT01

Programme: MSc Informatics, Master of Business Administration

Question type	Syllabus
General Aptitude 20 Marks	**Verbal Aptitude-**Basic English grammar: Tenses, articles, adjectives, prepositions, conjunctions, verb-noun agreement, and other parts of speech. Basic vocabulary: Words, idioms, and phrases in context. Narrative sequencing. **Quantitative Aptitude-**Data interpretation: Data graphs (bar graphs, pie charts, and other graphs representing data), 2- and 3-dimensional plots, maps, and tables. Numerical computation and estimation: Ratios, percentages, powers, exponents and logarithms, permutations and combinations, summations and series, Mensuration and Geometry **Analytical Aptitude-** Logic: Deduction and induction, analogy, numerical relations, and reasoning **Spatial Aptitude-**Transformation of shapes: Translation, rotation, scaling, mirroring, assembling, grouping, paper folding, cutting, and patterns in 2 and 3 dimensions.
Mathematics 20 Marks	Probability, Statistics, Calculus, Discrete Mathematics, basic number theory, algebra
English Reading comprehension 20 Marks	Two paragraphs, each having 5-10 questions.

Test Code: DUAT02

Programme: MSc Computer Science with Data Analytics, MSc Data Analytics and Computational Science

Question type	Syllabus
General Aptitude	**Verbal Aptitude-**Basic English grammar: Tenses, articles, adjectives, prepositions, conjunctions, verb-noun agreement, and

20 Marks	other parts of speech. Basic vocabulary: Words, idioms, and phrases in context. Narrative sequencing. **Quantitative Aptitude-**Data interpretation: Data graphs (bar graphs, pie charts, and other graphs representing data), 2- and 3-dimensional plots, maps, and tables. Numerical computation and estimation: Ratios, percentages, powers, exponents and logarithms, permutations and combinations, summations and series, Mensuration and Geometry **Analytical Aptitude-** Logic: Deduction and induction, analogy, numerical relations, and reasoning **Spatial Aptitude-**Transformation of shapes: Translation, rotation, scaling, mirroring, assembling, grouping, paper folding, cutting, and patterns in 2 and 3 dimensions.
Basic Mathematics 30 Marks	**Set Theory-**Concept of sets – Union, Intersection, Cardinality, Elementary counting; permutations and combinations. **Probability and Statistics-**Basic concepts of probability theory, Averages, Dependent and independent events, frequency distributions, measures of central tendencies and dispersions. **Algebra-**Fundamental operations in algebra, expansions, factorization, simultaneous linear /quadratic equations, indices, logarithms, arithmetic, geometric and harmonic progressions, determinants and matrices. **Coordinate Geometry-**Rectangular Cartesian coordinates, distance formulae, equation of a line, and intersection of lines, pair of straight lines, equations of a circle, parabola, ellipse and hyperbola. **Calculus-**Limit of functions, continuous function, differentiation of function, tangents and normal, simple examples of maxima and minima. Integration of functions by parts, by substitution and by partial fraction, definite integrals, applications of definite integrals to areas. **Vectors-**Position vector, addition and subtraction of vectors, scalar and vector products and their applications to simple geometrical problems and mechanics. **Trigonometry-**Simple identities, trigonometric equations, properties of triangles, solution of triangles, heights and distances, general solutions of trigonometric equations.

BSc level questions 10 Marks	**Computer Basics**: Organization of a computer, Central Processing Unit (CPU), structure of instructions in CPU, input/output devices, computer memory, and back-up devices. **Data Representation**: Representation of characters, integers and fractions, binary and hexadecimal representations, binary arithmetic: addition, subtraction, multiplication, division, simple arithmetic and two's complement arithmetic, floating-point representation of numbers, Boolean algebra, truth tables, Venn diagrams.

Test Code: DUAT03

Programme: MSc Electronics, MSc Applied Physics

Marks	Syllabus
General Aptitude 20 Marks	**Verbal Aptitude-**Basic English grammar: Tenses, articles, adjectives, prepositions, conjunctions, verb-noun agreement, and other parts of speech. Basic vocabulary: Words, idioms, and phrases in context. Narrative sequencing. **Quantitative Aptitude-**Data interpretation: Data graphs (bar graphs, pie charts, and other graphs representing data), 2- and 3-dimensional plots, maps, and tables. Numerical computation and estimation: Ratios, percentages, powers, exponents and logarithms, permutations and combinations, summations and series, Mensuration and Geometry **Analytical Aptitude-** Logic: Deduction and induction, analogy, numerical relations, and reasoning **Spatial Aptitude-**Transformation of shapes: Translation, rotation, scaling, mirroring, assembling, grouping, paper folding, cutting, and patterns in 2 and 3 dimensions.
Mathematics 10 Marks	Linear Algebra: Matrix Algebra, Systems of linear equations, Eigenvalues, Eigenvectors. Calculus: Mean value theorems, Theorems of integral calculus, Evaluation of definite and improper integrals, Partial Derivatives, Maxima and minima, Fourier series Differential equations: First order equations (linear and nonlinear), Higher order linear differential equations with constant coefficients, Method of variation of parameters, Partial Differential Equations.

	Probability and Statistics: Sampling theorems, Conditional probability, Mean, Median, Mode, Standard Deviation, Random variables, Discrete and Continuous distributions, Poisson distribution, Normal distribution, Binomial distribution, Correlation analysis, Regression analysis
Solid State Physics, Devices, Electronics Circuits 30 Marks	*Crystal structure*, Bravais lattices and basis. Miller indices. X-ray diffraction and Bragg's law Intrinsic and extrinsic semiconductors, variation of resistivity with temperature. Fermi level. p-n junction diode, I-V characteristics, diffusion current, drift current, mobility and resistivity, Zener diode and its applications *BJT*: characteristics in CB, CE, CC modes. Single stage amplifier, two stage R-C coupled amplifiers. MOS capacitor, MOSFET, LED, photo diode and solar cell Boolean algebra: Binary number systems; conversion from one system to another system; binary addition and subtraction. *Logic Gates:* AND, OR, NOT, NAND, NOR exclusive OR; Truth tables; combination of gates; de Morgan's theorem Simple DC and AC circuits with R, L and C components. Kirchhoff's Voltage/current Law, superposition, Thevenin's theorem, Norton's theorem, reciprocity, maximum power transfer. *Oscillators*: Barkhausen condition, sinusoidal oscillators. OP-AMP and applications: Inverting and noninverting amplifier.

Test Code: DUAT04

Programme: MSc Ecology with Specialization in Ecological Informatics

Question type	**Syllabus**
General Aptitude 20 Marks	**Verbal Aptitude-**Basic English grammar: Tenses, articles, adjectives, prepositions, conjunctions, verb-noun agreement, and other parts of speech. Basic vocabulary: Words, idioms, and phrases in context. Narrative sequencing. **Quantitative Aptitude-**Data interpretation: Data graphs (bar graphs, pie charts, and other graphs representing data), 2- and 3-dimensional plots, maps, and tables. Numerical computation and estimation: Ratios, percentages, powers, exponents and logarithms, permutations and combinations, summations and series, Mensuration and Geometry

	Analytical Aptitude- Logic: Deduction and induction, analogy, numerical relations, and reasoning **Spatial Aptitude-**Transformation of shapes: Translation, rotation, scaling, mirroring, assembling, grouping, paper folding, cutting, and patterns in 2 and 3 dimensions.
Elementary mathematics and computer basics 10 Marks	Number System, Sets, Functions, Algebra, Geometry, Trigonometry, Matrices and Determinants, Differentiation and Integration, Basic Statistics and Probability. Fundamentals of computers, operating systems, algorithm, data types, operators, basics of internet, programming languages, software applications.
Subject Questions (BSc Level) 30 Marks	**Physical and Chemical Science-** Fundamentals of thermodynamics, fundamentals of ecological physics, solar radiation and Earth's energy budget, radiation laws, atmospheric and terrestrial interaction of electromagnetic radiation, hydrological and biogeochemical cycles, fluid dynamics, fundamentals of electronics, and computational physics. Scope of environmental chemistry, Environmental pollution- Air, water, soil, pollutants in the environment and its interactions, consequences of pollution, assessment and control measures **Life Science-** Eukaryotic and prokaryotic cells- structure and function, taxonomy and systematics, anatomy physiology, reproduction, developmental biology, molecular biology, ethology. Origin of life, geological time scale, theories of evolution, speciation, inheritance of variation, mutation, and genetic variation, phenotypic variation, natural selection and adaptation, response of organisms to abiotic factors- thermoregulation, biogeography- global pattern of biodiversity, biodiversity of Indian sub-continent, major biomes of the world **Ecology and environmental science-** Basic concepts in Ecology and Environmental Science, Components of the atmosphere-lithosphere, hydrosphere, and biosphere, biotic factors-producers, consumers, decomposers, abiotic factors-temperature, soil, water, air, Food chain and energy flow, trophic structure, ecological niche, ecological interactions- competition, predation, symbiotic interactions, parasitism terrestrial ecosystem- forest, grassland, desert, aquatic ecosystems-freshwater ecosystem. estuary and marine ecosystem, Natural Resource management and conservation-Forest, Land, Food, Mineral, and energy resources, depletion of natural resources, habitat loss, species extinction, land degradation, climate change, Sustainable development, conservation biology

Test Code: DUAT05

Programme: MSc Data Analytics and BioAI

Question type	Syllabus
General Aptitude 20 Marks	**Verbal Aptitude-**Basic English grammar: Tenses, articles, adjectives, prepositions, conjunctions, verb-noun agreement, and other parts of speech. Basic vocabulary: Words, idioms, and phrases in context. Narrative sequencing. **Quantitative Aptitude-**Data interpretation: Data graphs (bar graphs, pie charts, and other graphs representing data), 2- and 3-dimensional plots, maps, and tables. Numerical computation and estimation: Ratios, percentages, powers, exponents and logarithms, permutations and combinations, summations and series, Mensuration and Geometry **Analytical Aptitude-** Logic: Deduction and induction, analogy, numerical relations, and reasoning **Spatial Aptitude-**Transformation of shapes: Translation, rotation, scaling, mirroring, assembling, grouping, paper folding, cutting, and patterns in 2 and 3 dimensions.
Basic Mathematics 10 Marks	**Set Theory**: Concept of sets – Union, Intersection, Cardinality, Elementary counting; permutations and combinations. **Probability and Statistics**: Basic concepts of probability theory, Averages, Dependent and independent events, frequency distributions, measures of central tendencies and dispersions.
BSc level questions 20 Marks	**Biochemistry:** Structure and functions of proteins, DNA, RNA, carbohydrates, lipids & vitamins. Bioenergetics, Electron Transport System and ATP synthesis, membrane structure and function. **Biotechnology**: Recombinant DNA technology, principles of gene cloning, applications of biotechnology in medicine, industry and agriculture, animal & plant cell culture, environmental biotechnology. **Molecular Genetics**: Principles of inheritance, linkage & crossing over, chromosomal aberrations, extrachromosomal

	inheritance, replication, transcription, translation, DNA repair and population genetics, mutation. **Chemistry**: Atomic Structure, Periodic Properties, Chemical bonding, Distribution of electrons in organic compounds. Stereo Chemistry, Configurational Isomerism, medicinal chemistry.
BSc level questions 10 Marks	**Computer Basics**: Organization of a computer, Central Processing Unit (CPU), structure of instructions in CPU, input/output devices, computer memory, and back-up devices. **Data Representation**: Representation of characters, integers and fractions, binary and hexadecimal representations, binary arithmetic: addition, subtraction, multiplication, division, simple arithmetic and two's complement arithmetic, floating-point representation of numbers, Boolean algebra, truth tables, Venn diagrams.

Test Code: DUAT06

Programme: MSc Data Analytics and Geoinformatics

Question type	**Syllabus**
General Aptitude 20 Marks	**Verbal Aptitude-**Basic English grammar: Tenses, articles, adjectives, prepositions, conjunctions, verb-noun agreement, and other parts of speech. Basic vocabulary: Words, idioms, and phrases in context. Narrative sequencing. **Quantitative Aptitude-**Data interpretation: Data graphs (bar graphs, pie charts, and other graphs representing data), 2- and 3-dimensional plots, maps, and tables. Numerical computation and estimation: Ratios, percentages, powers, exponents and logarithms, permutations and combinations, summations and series, Mensuration and Geometry **Analytical Aptitude-** Logic: Deduction and induction, analogy, numerical relations, and reasoning **Spatial Aptitude-**Transformation of shapes: Translation, rotation, scaling, mirroring, assembling, grouping, paper folding, cutting, and patterns in 2 and 3 dimensions.

BSc level Mathematics 10 Marks	**Statistics and Probability**: Measure of Central tendency, Measure of dispersion, skewness and Kurtosis, Elementary analysis of data. Probability and properties, conditional probability, multiplication rule. Total probability. Bayes' theorem and independence of events.
BSc level questions 20 Marks	**Earth Sciences**: Structure and composition of Environment-Atmosphere, Hydrosphere and Lithosphere, Earth Processes, Mineral and Power Resources in India, Biogeochemical Cycles, Meteorology, Climate Change, Origin and evolution of earth, Mineral and Power Resources in India. Agriculture Land Use/ Land Utilization Systems. **Ecology and Environment**: Biosphere, Organizational levels of biosphere, Ecosystem: Structure and Types, Food Chain and Energy Flow, Population and Community Ecology, Biodiversity and its Conservation. **Natural resources and Management**: Natural Resources-Forest, Land and Water Resources, Minerals, Marine, Energy (Renewable and Non-renewable) - Sources, Threats, Conservation and Management. **Remote sensing and GIS:** Electro Magnetic Spectrum, Components and types of remote sensing, Resolutions (Spectral, Spatial, Temporal & Radiometric), Platforms. GIS: components of GIS, Spatial data, Vector and Raster Data, GIS Data Model and Data Structure - Projection and coordinate Systems.
BSc level questions 10 Marks	**Computer Basics:** Organization of a computer, Central Processing Unit (CPU), structure of instructions in CPU, input/output devices, computer memory, and back-up devices. **Data Representation:** Representation of characters, integers and fractions, binary and hexadecimal representations, binary arithmetic: addition, subtraction, multiplication, division, simple arithmetic and two's complement arithmetic, floating-point representation of numbers, Boolean algebra, truth tables, Venn diagrams.