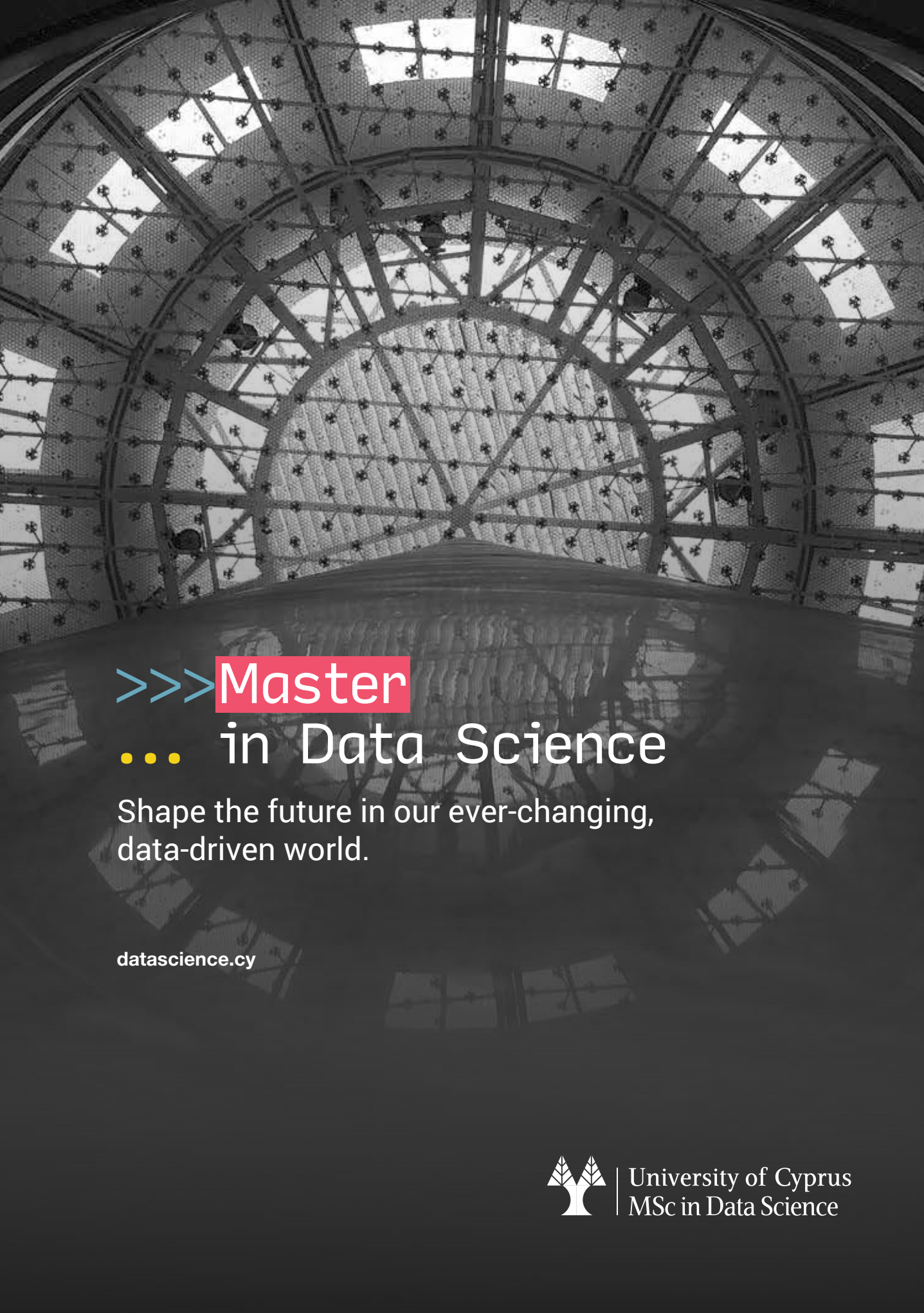
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MSc in Data Science

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Introduction

>>1.1 Overview and Goals

The **Master of Science in Data Science** is a highly-selective program for students who want to begin or advance their careers in data science with three specialization tracks: Computer Science, Statistics, and Business Analytics.

Data science is quickly becoming a field of central importance to the strategy of modern organizations. There is an increasing need for highly trained employees who can think across disciplines to transform data into actionable insights. The objective of the program is to provide students with a strong understanding of basic and advanced methods in statistical inference, machine learning, data visualization, and data mining, which are the essential skills a modern data scientist needs to posses.

The specialized Master's program in Data Science, offered jointly by the **Department of Business and Public Administration**, the **Department of Computer Science**, and the **Department of Mathematics and Statistics**, aspires to provide a high-quality education for the next generation of data scientists. It is important to note that existing data science programs are being sited in departments and schools of computer science, information science, mathematics and statistics, and management. Many of the most successful, particularly at the undergraduate level, represent university-wide coalitions frequently sponsored by interdisciplinary institutes, rather than by a particular department or school.

The duration of the program is **1,5-years (90 ECTS), while the language of instruction is English**. Working in the field of data science requires solid skills in statistics, managing and storing massive amounts of data, business analytics, as well as the ability to develop and program efficient algorithms for data analysis. These techniques are employed in complex applications in business, engineering, natural sciences and humanities. Part of the program is the **Capstone project in Data Science**, where students tackle specific and practical problems of an interdisciplinary nature. In this course students engage in all aspects of the lifecycle of data-science projects - from process modelling, data extraction, cleaning and validation, to data interpretation and visualization. A key aspect of this course will be student engagement with industry and the public sector.

The program offers 3 tracks (**Computer Science Track / Statistics Track / Business Analytics Track**). The first two semesters will be dedicated to core courses; students will select a track at the end of the second semester. The capstone project

will begin in the summer term, after the end of the second semester, under the supervision of a faculty member of the Department corresponding to the student's chosen track. In the third semester, the students will normally select 3 elective courses from their chosen track, with the option to choose 1 course from a different track with the written consent of their project's supervisor.

Target audience: new professionals in data science, and scientists and professionals who need data science skills to contribute to other fields.

Purpose and Objectives

- Offer students the opportunity to acquire deep knowledge, hands-on experience, and research expertise in one or more fields of Data Science.
- Prepare graduates able to pursue careers in positions of responsibility in either academia or industry.
- Help students to develop their inquisitive and critical thinking skills, to engage in independent and life-long learning, and pursue novelty and excellence in scientific and technical work.
- Provide transferable skills in scientific and technical communication (both written and spoken), gathering and collecting actionable information, collaborative work, creativity and innovative thinking.

Intended learning outcomes

- Build strong background in Data Science
  - Master powerful tools that address a wide range of topics in Data Science
  - Acquire statistical skills at an appropriately advanced level
  - Acquire deep knowledge in one or more fields of Data Science
  - Obtain familiarity with basic concepts in other Natural and/or Social Sciences, pertinent to data-driven discovery
- Build research foundations
  - Get acquainted with faculty research in fields of Data Science
  - Demonstrate in depth understanding of a breadth of disciplines, and become familiar with the dominant research directions
  - Acquire experience of independent work, ideally so in the context of class research projects
- Learn to solve real-world problems
  - Identify and assess the needs of an organization for a data science task
  - Collect and manage the data needed
  - Interpret data science analysis outcomes
  - Transform findings into actionable business strategies
  - Communicate data science-related information effectively using audience-appropriate format and delivery
  - Value and safeguard the ethical use of data
- Build multi-context skills
  - Develop transferable skills such as: oral and written scientific communication, near fluent use of scientific English, use of information/ communication technology, organization and planning of group work
  - Exhibit versatility and innovative thinking in addressing and managing open questions in a variety of contexts, as an essential asset for careers in research, industry, commerce, education and the public sector

Students Workload

Students should plan on spending around 12 hours per week per data science course, assuming they have all the prerequisites.

Teaching hours

The Compulsory Courses of the program are delivered in morning sessions. Elective courses are delivered in morning/afternoon sessions.

>>1.2 Procedure and Criteria of Admission

The admission procedure for postgraduate students at the University of Cyprus takes place through the Graduate School, which announces available programs and positions. In addition to announcing the number of positions available in each field of study and the application procedure, the eligibility criteria for candidates are also mentioned, as well as other required documents that must be attached to the application.

The minimum qualifications required in order to apply, are:

- A recognizezd University Degree in a related field (Statistics, Computer Science, Mathematics, Engineering, Economics, Business, Physics) from an accredited Institution with a GPA of at least 6.5/10. If the degree is not yet available during the application process, the student must submit it before the start of classes in September.
- Proof of **very good knowledge of the English language** (test results and/or certificates obtained; the certificates that demonstrate proficiency in English can be found at the following Web site: https://www.ucy.ac.cy/graduateschool/en/admissions/admission-requirements). This is not necessary for applicants who received their degrees from programmes taught in English.

Additional academic criteria required in order to apply, are:

- Successful completion of courses in Probability, Statistics or Econometrics and fundamental Mathematical courses (e.g., basic calculus, linear algebra, etc)
- Successful completion of courses in Computer Science (e.g. programming principles in Python, R, etc)

Applications are evaluated by the Committee of the Postgraduate Program, which proposes recommendations to the Councils of the respective departments, which are responsible for the final approval of the students admitted. Candidates are ranked according to the following scale: (1): not acceptable, (2): acceptable under certain conditions (conditional offer), (3): acceptable.

Submission of applications

The Data Science Programme will receive postgraduate students each year, on dates and with procedures determined by the University. Applications will be submitted to the Secretariat of the Graduate School online at

https://www.ucy.ac.cy/graduateschool/en/apply-now

The applications should include the following:

1. A Curriculum Vitae
2. Certified copies of University degrees or confirmation of graduation (Admitted candidates will need to submit the certified degrees along with the acceptance of the offer to the University of Cyprus before their registration).
3. Copies of Transcripts for all program of study, graduate and undergraduate.
4. A brief statement of personal goals and research interests (up to 2 pages).
5. The names and emails of at least two (2) referees (University Professors) familiar with the candidate and his/her academic performance. Candidates should request letters of recommendation to be sent directly to the University. The reference letters are electronically submitted through the online application system.

Admitted candidates will be required to submit copies of degree certificates officially certified by the Issuing Authority.

It is the applicant's responsibility to ensure that their application has successfully been submitted. Upon successful submission, the candidate will receive an automated confirmation e-mail.

Fees: **Master's Degree: €5.125**

ERASMUS + MASTER DEGREE LOANS

The European Investment Fund (EIF) is working with the University of Cyprus to launch a new pilot scheme, allowing students to use the Erasmus+ Master Degree Loans to finance their Master degree studies in an Erasmus+ Program country. This agreement will support students resident in any of the 32 other Erasmus+ Program Countries to move to Cyprus in order to undertake their Master program at the University of Cyprus.

To be eligible to apply for an Erasmus+ Master Degree Loan:

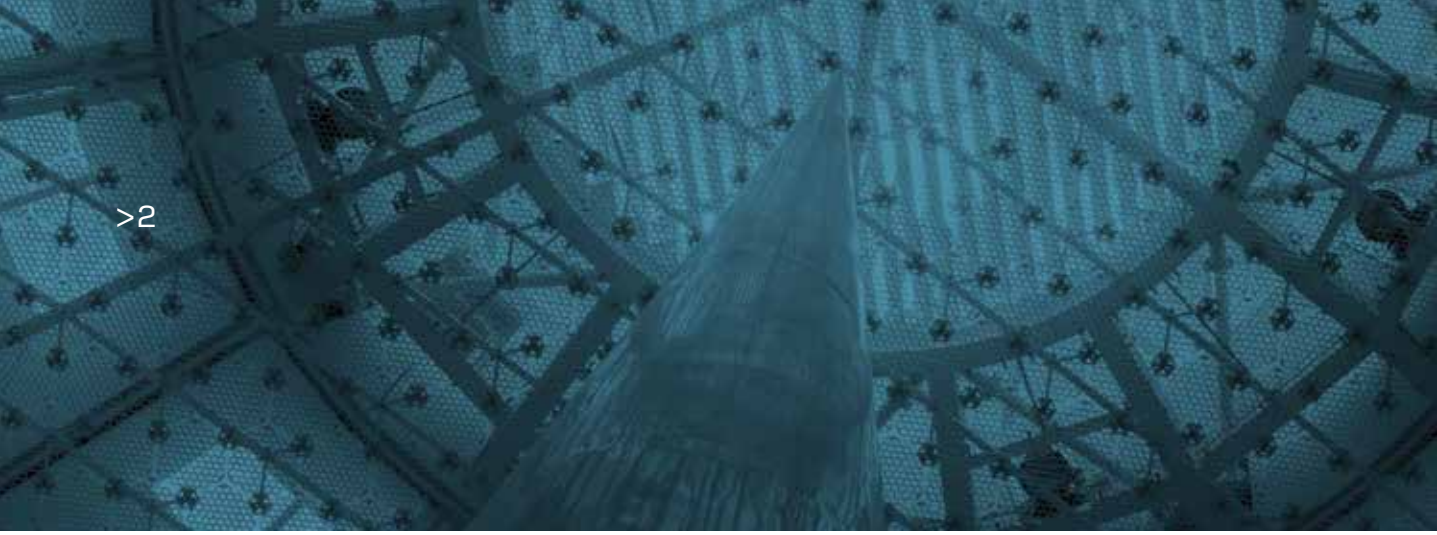
- You must hold a recognized first cycle (undergraduate) qualification.
- You have not obtained your previous academic qualifications from any Institution in Cyprus.
- You have applied for and been accepted for a Master's place in one of the Master degree programs of University of Cyprus
- You have not already entered into a student loan covered by the Erasmus+ program with an entity other than University of Cyprus.
- You must be a resident of a program country other than Cyprus.

Master's students who are interested in making an application to the University of Cyprus can get further information at:

http://www.ucy.ac.cy/graduateschool/en/erasmus-loan-guarantee

Scholarships

University of Cyprus offers a limited number of tuition scholarships to selected students admitted to the program. All applicants for admission will be considered for these awards on a competitive basis. These scholarships will cover a portion of the tuition costs.



>2

The Program of Studies

>>2.1 Program Structure

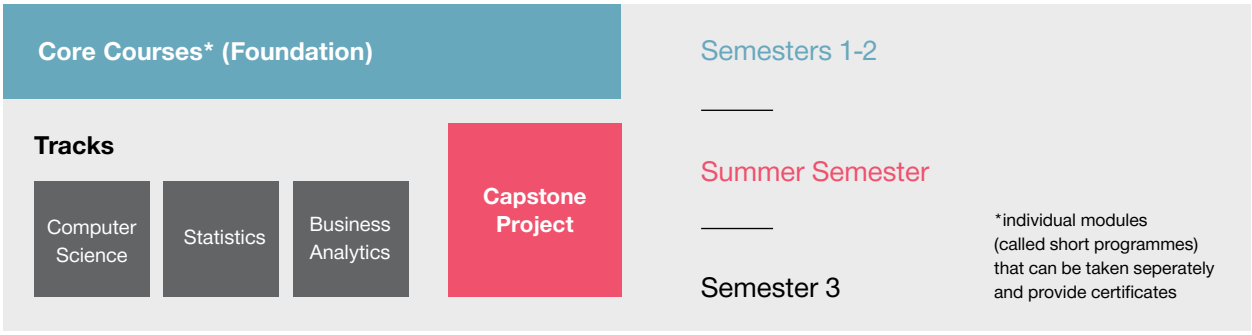


Figure 2 Overview of the Programme

PROGRAM REQUIREMENTS	ECTS
Compulsory courses	48
Elective courses	
a. Courses of specialization	24
b. General Education courses/ Free Electives	8
Capstone Project	10
Total ECTS	90

>>2.2 Indicative Program of Studies

First Semester	CS Introduction to Data Science and Analytics	8
	MAS Probability and Statistics for Data Science	8
	MAS Statistical Simulation and Data Analysis	8
	One Elective Course (offered by other entities of the University of Cyprus, e.g. Department of Law, Center for Entrepreneurship etc.)	4
Second Semester	CS Big Data Analytics	8
	BUS Business Analytics Applications	8
	MAS Statistical Learning	8
	One Elective Course (offered by other entities of the University of Cyprus, e.g. Department of Law, Center for Entrepreneurship etc.)	4
Summer Semester	Capstone Project in Data Science (1st Phase)	5
Third Semester	Computer Science Track/ Statistics Track/Business Analytics Track Course	8
	Computer Science Track/ Statistics Track/Business Analytics Track Course	8
	Computer Science Track/ Statistics Track/Business Analytics Track Course	8
	Capstone Project in Data Science (2nd Phase)	5

>3

Course Descriptions

>>3.1 Core Courses

DSC 510 Introduction to Data Science and Analytics

This course will examine how data analysis technologies can be used to improve decision-making. The aim is to study the fundamental principles and techniques of data science, and we will examine real-world examples and cases to place data science techniques in context, to develop data-analytic thinking, and to illustrate that proper application is as much an art as it is a science. In addition, this course will work hands-on with the Python programming language and is associated data analysis libraries.

DSC 530 Probability and Statistics for Data Science

This is a theoretical course covering fundamental topics of probability and statistics in the context of data science with its inherent challenges. This course will start with a review of fundamental probability, covering topics like random variables, their distribution functions, expected values, conditioning on certain events and independence. The students will be acquainted with certain families of probability distributions and then will learn how to estimate certain quantities of interest from observations.
A range of properties of estimators will be studied, including sufficiency, unbiasedness and consistency, which enable the evaluation of their quality with an emphasis in the framework of big datasets.
The students will also learn how to introduce different types of hypotheses, how to construct tests for their hypotheses, as well as how to compare between tests and how to construct confidence intervals for their estimators.

DSC 531 Statistical Simulations and Data Analysis

The students will be introduced to the R programming language, a programming language that was specifically developed for analyzing data, and is today widely used in most organizations that conduct data analysis. The students will learn how to explore datasets in R, using basic visualization tools and summary statistics, how to run different kinds of regressions and analyses, and how to perform statistical inference in practice, for example how to test certain hypotheses regarding the data or how to compute confidence intervals for quantities of interest. The students will also learn how to use R in order to conduct simulations, an extremely useful tool that can fulfill a wide range of analytical tasks. Simulation techniques covered will include Monte Carlo, importance sampling and rejection sampling. Finally, the students will learn how to estimate the precision of computed sample statistics using resampling methods. The course uses a hands-on approach, with nearly half the work done in the lab.

DSC 511 Big Data Analytics

This course seeks a balance between foundational but relatively basic material in algorithms, statistics,

graph theory and related fields, with real-world applications inspired by the current practice of internet and cloud services. Specifically, this course will look at social & information networks, recommender systems, clustering and community detection, search/retrieval/topic models, dimensionality reduction, stream computing, and online ad auctions. Together, these provide a good coverage of the main uses for data mining and analytics applications in social networking, e-commerce, social media, etc. The course is a combination of theoretical materials and weekly laboratory sessions, where several large-scale datasets from the real world will be explored. For this, students will work with a dedicated infrastructure based on Hadoop & Apache Spark.

DSC 550 Business Analytics Applications

This course presents knowledge and skills for applying business analytics to managerial decision-making in modern organizations. Key topics include descriptive, predictive, and prescriptive analytics, measuring the economic value of information in analytics investments, and using data to improve decision making under risk and uncertainty. Specifically, students will learn how to use data and analysis to make better decisions across different functional areas of the organization.

DSC 532 Statistical Learning

Students will acquire the knowledge to conduct statistical analysis on a variety of data sets using a wide range of modern computerized methods. The students will learn how to recognize which tools are needed to analyze different types of datasets, how to apply these tools in each case, and how to employ diagnostics to assess the quality of their results. They will learn about statistical models, their complexity and their relative benefits depending on the available data. Some of the tools that the students will come to learn well include linear simple and multiple regression, nearest neighbors methods, shrinkage methods (ridge, lasso), dimension reduction methods (principal components), logistic regression, linear discriminant analysis, tree-based methods, model selection algorithms with criterion or by resampling techniques and clustering. The focus of the course will be less on theory and more on providing the students with as much intuition as possible and acquainting them with as many methods as possible. The course will make substantial use of the R statistical programming language and its libraries.

>>3.2 Elective Courses of Specializations

>3.2.1 Computer Science Track

DSC 512 Information Retrieval and Search Engines

_Introduction to Information Retrieval
_Boolean Retrieval
_Text encoding: tokenisation, stemming, lemmatisation, stop words, phrases.
_Dictionaries and Tolerant retrieval
_Index Construction and Compression
_Scoring and Term Weighting
_Vector Space Retrieval
_Evaluation in information retrieval
_Relevance feedback/query expansion
_Text classification and Naive Bayes
_Vector Space Classification
_Flat and Hierarchical Clustering
_Web Search Basics
_Web crawling and indexes
_Link Analysis

DSC 513 Advanced Topics in Data Management

Fundamentals of modern Database Management Systems (DBMSs): storage, indexing, query optimization, transaction processing, concurrency and recovery. Fundamentals of Distributed DBMSs, Web Databases and Cloud Databases (NoSQL / NewSQL): Semi-structured data management (XML/ JSON, XPath and XQuery), Document data-stores (i.e., CouchDB, MongoDB, RavenDB), Key-Value

data-stores (e.g., BerkeleyDB, MemCached), Introduction to Cloud Computing (NFS, GFS/ Hadoop HDFS, Replication/Consistency Principles), Big-data processing/analytic frameworks (Apache MapReduce/PIG, Spark/Shark), Column-stores (e.g., Google's BigTable, Apache's HBase, Apache's Cassandra), Graph databases (e.g., Twitter. FlockDB) and Overview of NewSQL (Google's Spanner/F1). Spatio-temporal data management (trajectories, privacy, analytics) and index structures (e.g., R-Trees, Grid Files) as well as other selected and advanced topics, including: Embeeded Databases (sqlite), Sensor / Smartphone / Crowd data management, Energy-aware data management, Flash storage, Stream Data Management, etc.

DSC 514 Natural Language Processing

Natural language processing (NLP) is one of the most important technologies of the information age, and a crucial part of artificial intelligence. Applications of NLP are everywhere because people communicate almost everything in language: web search, advertising, emails, customer service, language translation, medical reports, etc. In this course, several models and algorithms for automated textual data processing will be described:

>1 morpho-lexical level: electronic lexica, spelling checkers;
>2 syntactic level: regular, context-free, stochastic grammars, parsing algorithms;
>3 semantic level: models and formalisms for the representation of meaning.

Several application domains will be presented: Linguistic engineering, Information Retrieval, Text mining (automated knowledge extraction), Textual Data Analysis (automated document classification, visualization of textual data).

DSC 515 Deep Learning

The course aims at teaching the required skills to use deep learning methods on applied problems. It will show how to design and train a deep neural network for a given task, and the sufficient theoretical basis to go beyond the topics directly seen in the course. The planned content of the course:

- What is deep learning, introduction to tensors.
- Basic machine-learning, empirical risk minimization, simple embeddings.
- Linear separability, multi-layer perceptrons, back-prop.
- Generalized networks, autograd, batch processing, convolutional networks.
- Initialization, optimization, and regularization. Drop-out, activation normalization, skip connections.
- Deep models for Computer Vision.
- Analysis of deep models.
- Auto-encoders, embeddings, and generative models.
- Deep learning for sequences - Recurrent neural networks (RNNs); vanishing and exploding gradients; Long Short-Term Memory (LSTM); deep RNNs; bidirectional RNNs; combination of CNNs with RNNs - pytorch tensors, deep learning modules, and internals.

DSC 516 Cloud Computing

This course covers topics and technologies related to Cloud Computing and their practical implementations. The course is organized in four parts focising on: (i) Fundamental concepts and models of Cloud Computing; (ii) Cloud-enabling technologies: warehouse-scale machines, virtualization, and storage; (iii) Cloud application programming models and paradigms. (iv) Cloud resource orchestration, monitoring, and DevOps. The student will explore different architectural and service models of cloud computing, the concepts of virtualization, containerization, and cloud orchestration. Through lectures, tutorials, and laboratory sessions, the student will gain hands-on experience with various features of popular cloud platforms, such as Openstack, VMWare,

Docker, and Kubernetes, as well as commercial offerings like Google App Engine, Microsoft Azure and Amazon Web Service. Advanced cloud programming paradigms such as Hadoop's MapReduce and Microservices are also included in the course. Students will also learn the concept of modern Big Data analysis on cloud platforms using various data mining tools and techniques. The lab sessions will cover cloud application development and deployment, use of cloud storage, creation and configuration of virtual machines and data analysis on cloud using data mining tools. Different application scenarios from popular domains that leverage the cloud technologies such as online social networks will be explained. The theoretical knowledge, practical sessions and assignments aim to help students to build their skills to develop large-scale industry standard applications using cloud platforms and tools.

DSC 551 Data Visualization

Introduction to Data visualization, Web development, Javascript, Data driven documents (D3.js), Interaction, filtering, aggregation, Perception, cognition, Designing visualizations (UI/UX), Text visualization, Graphs, Tabular data viz Music viz, Introduction to scientific visualization, Storytelling with data / data journalism, Creative coding.

>3.2.2 Statistics Track

DSC 533 Survey Sampling

Survey design, sampling and nonsampling errors, simple random sampling, stratified sampling, systematic sampling, cluster sampling, ratio estimators, regression estimators, determination of optimal sample size, bias in survey sampling, modern techniques of survey sampling.

DSC 534 Time Series Analysis

Stochastic processes, weak and strong stationarity. Autoregressive and moving average based models for stationary and non-stationary time series. Trend and seasonal behaviour, sample autocorrelation function and sample partial autocorrelation function. Parameter estimations, model identification, prediction. ARMA, ARIMA and SARIMA models. Properties, estimation and examples. ARCH and GARCH models for volatility.

DSC 535 Multivariate Analysis

This course studies topics from multivariate statistical analysis. Topics covered include: random vectors, measures of center and variation in multivariate moments. Multivariate normal distribution. Tests for normality. Estimation of the mean vector and the variance analysis, independence, multivariate –covariance matrix. Wishart and Hotelling distributions. Statistical inference. Union – Intersection Test. Confidence regions. Multivariate analysis of variance and multivariate regression analysis. Least squares method and Wilks distribution. Analysis of covariance. Principal components, Factor analysis, Discriminant analysis, Cluster analysis. The R statistical programming language will be used for applying the introduced methods in a range of Data Science problems.

DSC 536 Bayesian Statistics

This course introduces Bayesian Statistics, an intuitive approach to Statistics allowing for better accounting of uncertainty. Topics include: subjective probability, Bayes rule, prior and posterior distributions, conjugate and non-informative priors, point-wise estimation and credible intervals, hypothesis testing, introduction to Bayesian decision analysis, introduction to empirical Bayes analysis, introduction to Markov chain Monte Carlo techniques. The course will make use of R statistical programming language for the implementation of algorithms for extracting information from the posterior and for the application of the introduced methods in a range of Data Science problems.

DSC 537 Computational Statistics

Multiple regression, Cholesky decomposition, diagnostics and collinearity, principal components and eigenvalue problems. Nonlinear statistical methods: Maximum likelihood estimation, Newton-Raphson and related methods, multivariate data and the Newton Raphson method, optimization techniques (unconditional and under constraints) EM algorithm. Numerical Integration and Approximation: Newton-Coates method, spline interpolation, Monte Carlo integration, general approximation methods. Probability Density Estimation: Histogram, linear and non-linear smoothing, splines. Bootstrap.

>3.2.3 Business Analytics Track

DSC 551 Data Visualization

Introduction to Data visualization, Web development, Javascript, Data driven documents (D3.js), Interaction, filtering, aggregation, Perception, cognition, Designing visualizations (UI/UX), Text visualization, Graphs, Tabular data viz Music viz, Introduction to scientific visualization, Storytelling with data / data journalism, Creative coding.

DSC 552 Managing Business Processes with Information Systems & Analytics

This course provides students the key tools to analyze and improve business processes in organizations, with an emphasis on the service sector. This is achieved by bringing together key ideas from the fields of information systems, business analytics, and business process design and management. The course introduces the fundamental types of information systems, including enterprise-wide systems (ERP, SCM, CRM), and the basic principles of supporting business strategy with Information Systems. The students will learn how to use information systems to support their organization's business processes, and how to use business analytics and business process modeling techniques to inform key decisions during Business Process Re-engineering. The students will be introduced to different business analytics systems in fields such as marketing, retail, supply-chain management, e-commerce, etc. and will learn how to measure business process performance through appropriate metrics and frameworks (e.g. the Balanced Scorecard approach).

DSC 553 Project Management using Analytical Tools

This course examines the project management process with a focus on business analytics techniques to overcome the pitfalls and obstacles that frequently occur during a typical project. Designed for business leaders responsible for implementing projects, as well as beginning and intermediate project managers. Includes topics on planning and scheduling issues, costing and budgeting, staffing and organizing, project management methodologies, and the use of data to inform the project manager's decisions throughout the project's lifecycle. During the course, computer software dealing with project management will also be presented.

DSC 554 Information Networks

Topics include: how to model the formation of social and economic networks; understand and measure certain patterns of real-world networks;

identify, quantify and model how opinions, fads, political movements and diseases spread through interconnected systems and measure the robustness and fragility of them. We will bring together models and techniques from economics, sociology, math, physics, statistics and computer science to answer these questions.

In more detail the course will include: Repetition of Statistical Definitions, Background and Network Elements, Networking, Social Networking & Behavioral Contagion, Project Management Networks, Economic complexity, Visualization of Networks

DSC 555 Quantitative and Qualitative Decision-Making

This course explores decision making and policy formulation in organizations. Includes goal setting and the planning process, rational models of decision making, effective combination of qualitative and quantitative data (e.g. triangulation, complementarity etc.) with respect to the goal set, evaluation of alternatives, prediction of outcomes, cost-benefit analysis, decision trees, uncertainty and risk assessment, and procedures for evaluation of outcomes.

DSC 556 Web Analytics for Business

The course explores web analytics, text mining, web mining, and practical application domains. The web analytics part of the course studies the metrics of websites, their content, user behavior, and reporting. The Google analytics tool is used for collection of website data and doing the analysis. The text mining module covers the analysis of text including content extraction, string matching, clustering, classification, and recommendation systems. The web mining module presents how web crawlers process and index the content of web sites, how search works, and how results are ranked. Application areas mining the social web and game metrics will be extensively investigated.

DSC 557 Data Mining for Business Analytics

Enterprises, organizations and individuals are creating, collecting, and using massive amount of structured and unstructured data with the goal to convert the information into knowledge, to improve the quality and the efficiency of their decision-making process, and to better position themselves to the highly competitive marketplace. Data mining is the process of finding, extracting, visualizing and reporting useful information and insights from both small and large datasets with the help of sophisticated data analysis methods. It is part of the business analytics, which refers to the process of leveraging different forms of analytical techniques to achieve desired business outcomes through requiring business relevancy, actionable insight, performance management, and value management. The students in this course will study the fundamental principles and techniques of data mining. They will learn how to apply advanced models and software applications for data mining. Finally, students will learn how to examine the overall business process of an organization or a project with the goal to understand (i) the business context where hidden internal and external value is to be identified and captured, and (ii) exactly what the selected data mining method does.

AFN 521 Financial Theory

The course presents the theory of financial decisions and corporate policy. It covers discounted

cash flow and contemporary methods of capital budgeting (comparison of techniques, relevant cash flows, projects with different lives, optimal timing, constraints, inflation), risk and uncertainty, mean-variance portfolio choice, capital asset pricing models and arbitrage pricing theory, efficient markets, capital structure and dividend policy, basic option pricing, corporate restructuring and mergers and acquisitions.

AFN 522 Investments

The course covers the basic principles of investment analysis and valuation, with emphasis on security analysis and portfolio management in a risk-return framework. Security analysis focuses on whether an individual security is correctly valued in the market (i.e., it is the search for mispriced securities). Portfolio management deals with efficiently combining securities into a portfolio tailored to the investor's preferences and monitoring/evaluating the portfolio. The course covers both the theory and practical aspects of investments.

>3.3 Free Elective Courses

The free elective courses are offered by other entities of the University of Cyprus, e.g. Department of Law, Center of Entrepreneurship etc.

For example, the courses offered by the Center of Entrepreneurship can be found in the following link: https://www.c4e.org.cy/activities/education-and-training/free-elective-courses

>4

Capstone Project

The capstone project has been designed to apply knowledge into practice and to develop and improve critical skills such as problem-solving and collaboration skills. Students are matched with research labs within the UCY community and with industry partners to investigate pressing issues, applying data science areas. Capstone projects aim to give students some professional experience in a real work environment and help enhance their soft skills. These projects involve groups of roughly 3-4 students working in partnership.

The process is the following:

- A short description of projects are announced to students.
- Students bid up to three projects taking into account the fields of their interest or research.
- The data science directors make the final assignment of projects to students. The projects are under the supervision of a member of the Programme's academic staff.
- Specific learning outcomes are stipulated in a learning agreement between the student, the supervisor and the company.
- The student keeps a log file of his/her work and at the end writes a progress report (6000 words).
- The company is obliged to monitor the progress of the students and to provide relevant mentorship.

Final assessment is carried out by the company and the supervisor.

The companies that offer projects will be announced in the Web site of the programme:

https://www.datascience.cy/

>5

Optional Research Project

Students that would like to continue their studies and be enrolled in a PhD programme, have the option of an additional research project. This option will be made available only to exceptional students who have clearly demonstrated research interest during their studies. The decision of offering this option to students will be solely based on the Interdepartmental Board provided appropriate supervisors have been found. Specifically, the research project option will be available to the students who want to pursue Ph.D. studies in any area covered by the programme. Such students need to satisfy the respective departmental Ph.D. admission criteria. The research project option will replace a restricted elective course.

>6

Gender Balance in the Program

The Data Science Programme aims to be a benchmark programme within the University of Cyprus on promoting gender diversity. Towards this goal, a diversity subcommittee within the advisory board is tasked with strategically engaging in efforts and recommending actions to the inter-departmental board to promote Gender Diversity within the Programme. The Programme is also in close contact with the newly established office of Diversity (www.ucy.ac.cy/diversity) of the University.

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