الخطة الدراسية لبرنامج

"الدبلوم البريطاني"

في

الذكاء الاصطناعي (تحليل البيانات)

تتكون الخطة الدراسية لنيل الدرجة الجامعية المتوسطة في برنامج الدبلوم البريطاني/ تخصص **تحليل البيانات** من (68) ساعة معتمدة، موزعة على النحو الآتي:

الرقم	المتطلب	ساعة معتمدة
.1	متطلب كلية	11
.1	المهارات المساندة	12
.4	متطلبات التخصص	45
المجموع		**68**

وصف مخرجات التخصص:

يعد تخصص الذكاء الاصطناعي (تحليل البيانات) التخصص الذي يهتم بتطوير، وتصميم الأنظمة الذكية، عالية الجودة آخذا بعين الاعتبار تخصيصات المستخدم، ومتطلباته على جميع المستويات. من خلال البرنامج سيتعلم الطالب مهارات عالية المستوى في مجالات تحليل و تنقيب البيانات و بناء أنظمة توفر حلول ذكية للأعمال.

المجالات المعرفية للمهارات المتخصصة:

الرقم	اسم المجال	الساعات المعتمدة		المواد التعليمية للمجال
		نظري	عملي	
.1	تطوير البرمجيات	13	5	Programming Maths For Computing Database Design & Development Data Structures & Algorithms Computing research project Business Process Support
.2	ادارة المشاريع البرمجية	5	1	Professional Practice Planning a Computing Project
.3	ادارة الشبكات و تصميمها	4	2	Networking Information Security
.4	بناء الأنظمة الذكية و تحليل البيانات	10	5	Data Analytics Machine Learning Advanced Programming for Data Analysis Applied Analytical Models Big Data Analytics and Visualisation
مجموع الساعات المعتمدة		**32**	**13**	**45 س.م**

الخطة الدراسية لتخصص " الذكاء الاصطناعي (تحليل البيانات)"

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أولاً: متطلب كلية، (11) ساعات معتمدة موزعة على النحو الآتي:

رقم المادة	اسم المادة	س.م	نظري	عملي	المتطلب السابق
020000111	المواطنة الايجابية ومهارات الحياة	3	3	0	
020000231	ريادة الاعمال	2	2	0	
II SS100	Study Skills	3	3	0	
ICR 100	Career Readiness	3	3	0	
المجموع (س.م)		**11**			

ثانياً: المهارات المساندة ، (12) ساعات معتمدة موزعة على النحو الآتي:

رقم المادة	اسم المادة	س.م	نظري	عملي	المتطلب السابق
040011250	التدريب الميداني – الذكاء الاصطناعي (تحليل البيانات)	3	0	9	
040002100	مقدمة في انظمة التشغيل	3	2	3	
040002101	مقدمة في البرمجة باستخدام(Java)	3	2	3	
040002102	مقدمة في تكنولوجيا المعلومات	3	3	0	
المجموع (س.م)		**12**	7	5	

الخطة الدراسية لتخصص " الذكاء الاصطناعي (تحليل البيانات) "

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ثالثاً: متطلبات التخصص، (45) ساعة معتمدة، موزعة على النحو الآتي:

رقم المادة	اسم المادة	س.م	نظري	عملي	المتطلب السابق
040011112	Programming	3	2	3	040002101
040011131	Networking	3	2	3	
040011121	Professional Practice	3	3	0	
040011113	Database Design & Development	3	2	3	
040011232	Information Security	3	2	3	040011131
040011122	Planning a Computing Project	3	2	3	
040011111	Math for computing	3	3	0	
040011216	Computing research project	3	2	3	040011122
040011215	Business Process Support	3	2	3	040011113
040011141	Data Analytics	3	2	3	040011111
040011242	Machine Learning	3	2	3	040011112
040011214	Data Structure & Algorithms	3	2	3	040011112
040011243	Advanced Programming for Data Analysis	3	2	3	040011112 ,040011141
040011244	Applied Analytical Models	3	2	3	040011141
040011245	Big Data Analytics and Visualisation	3	2	3	040011141
	المجموع (س.م)	**45**	**32**	**13**	

الخطة الاسترشادية لتخصص " الذكاء الإصطناعي (تحليل البيانات) "

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الفصل الدراسي الأول			الفصل الدراسي الثاني		
اسم المادة	رقم المادة	س.م.	اسم المادة	رقم المادة	س.م.
مقدمة في تكنولوجيا المعلومات	040002102	3	تخطيط المشاريع المحوسبة	040011122	3
مقدمة في البرمجة باستخدام (Java)	040002101	3	البرمجة	040011112	3
الرياضيات و الحوسبة	040011111	3	تصميم قواعد ابيانات و تطويرها	040011113	3
مقدمة في أنظمة التشغيل	040002100	3	شبكات الحاسوب	040011131	3
متطلب كلية	–	3	ممارسات مهنية و اخلاقية	040011121	3
متطلب كلية	–	3	تحليل البيانات	040011141	3
المجموع		**18**	**المجموع**		**18**

الفصل الدراسي الثالث			الفصل الدراسي الرابع		
اسم المادة	رقم المادة	س.م.	اسم المادة	رقم المادة	س.م.
متطلب كلية	–	2	مشاريع الأبحاث الحوسبية	040011216	3
أمن المعلومات	040011232	3	النماذج التحليلية التطبيقية	040011244	3
أنظمة دعم الاعمال	040011215	3	تحليل البيانات الضخمة والتصور	040011245	3
البرمجة المتقدمة لتحليل البيانات	040011243	3	متطلب كلية	–	3
تراكيب البيانات و الخوارزميات	040011214	3	التدريب الميداني	040011250	3
تعلم الآلة	040011242	3			
المجموع		**17**	**المجموع**		**15**

الوصف المختصر للمواد التعليمية لتخصص "الذكاء الإصطناعي (تحليل البيانات)"

أولاً: متطلبات الكلية

المواطنة الإيجابية ومهارات الحياة020000111 (3: 3-0)

يوضح المساق مفهوم المواطنة ومهارات الحياة وأهميتهما في اكتساب مهارات قيمه، والعمل على استخدام هذه المهارات في سعيهم للحصول على تعليم افضل ونتائج ايجابيه في العمل، حيث ان المساق يراعي بناء المعرفه في الموضوعات التي يتضمنها البرنامج كما ويبني المهارة عند الشباب لاستخدامها في تطبيق المعرفه كما ويبني الثقه في قدرات الشباب على استخدام هذه المعرفه والمهارة بالاضافه الى توفير الدعم الشخصي والبيئي لتغيير السلوك من خلال تعزيز قيم المواطنة الايجابية والثقافة المجتمعية البناءة والعمل المجتمعي التطوعي

ريادة الأعمال 020000231 (2: 2-0)

يوضح المساق مفهوم ريادة الأعمال، تأثيرها في الإقتصاد الوطني ودورها في القضاء على البطالة، وكيفية استحداث أفكار ريادية ومبتكرة لتوائم احتياجات المجتمع و مواجهة المخاطر والتحديات التي تعترضها، وتقييم فرص نجاحها من خلال دراسة الجدوى، وكيفية حساب كلفتها وتمويلها وإدارة شؤونها المالية، وكيفية عمل تسويق لها، والطبيعة القانونية لها وخطة العمل اللازمة للبدء بها مع التركيز على التجربة الأردنية في هذا المجال.

Study Skills II SS100 (3:3-0)

Study Skills is a course provided by Pearson Education. In this course students will practice effective time management, study and organizational skills in addition to other skills that will enhance students' performance throughout college education as well as in their future workplace.

Career Readiness ICR 100 (3:3-0)

This blended learning course provided by Pearson is designed to help students develop the skills and competencies expected by employers in order to increase their competitive employment advantage and achieve their career goals.

The course will help with students' personal development and employment potential through participating in interactive classes and working on an online program provided by Pearson.

By the end of the course students will have produced high quality CVs and learnt the correct way to handle interviews, they will also have developed the skills and competencies expected by employers to increase their employability.

ثانياً: المهارت المساندة

Training- Artificial Intelligence (Data Analytics) (040011250) (3: 0-9) This track will provide the student with practical working experience related to his field of study. The aim is to provide the student with firsthand knowledge in his domain and allow him to learn directly from experts in the workforce. The real working environment will prepare the student for a successful career launch and sharpen his communication skills and teamwork abilities. Students are required to train for a predefined period, an instructor will follow-up on the progress of the student during the training.
Introduction to Operating Systems (040002100) (3: 2-3) This course provides an introduction to operating systems. It introduces the main concepts of Linux operating systems. The Linux distributions and installations. It also covers the main components of Linux, the philosophy and the terminology. The file system of Linux is introduced and the disk management techniques. The course presents the shell commands and the Linux command line interface (CLI). Finally it introduces the user environment and the permissions.
Introduction to programming using Java (040002101) (3: 2-3) This course introduces students to the basics of problem solving and design using pseudo code and flowcharts. It also gives an introduction to programming using JAVA language, which enables the students to write simple JAVA programs using variables, arithmetic and logical operations, decisions and loops, and functions implementation.
Introduction in Information technology (040002102) (3: 3-0) This track gives the basic concepts of computer and information technology from its two sides (The physical and programmatic sides) and it covers: An introduction in computer components the physical and programmatic components, Counting systems, The ways of data visualization, Stages of programs development, Applied software and systems software. To focus on the fundamentals and ways of problem solving and algorithms design.

ثالثاً: متطلبات التخصص

Programming (040011112)(3:2-3)

This unit introduces students to the core concepts of programming with an introduction to algorithms and the characteristics of programming paradigms. Among the topics included in this unit are: introduction to algorithms, procedural, object-orientated & event-driven programming, security considerations, the integrated development environment and the debugging process.

Networking (040011131)(3:2-3)

The aim of this unit is to provide students with wider background knowledge of computer networking essentials, how they operate, protocols, standards, security considerations and the prototypes associated with a range of networking technologies. Students will explore a range of hardware, with related software, and will configure and install these to gain knowledge of networking systems. A range of networking technologies will be explored to deliver a fundamental knowledge of Local Area Networking (LAN), Wide Area Networking (WAN) and their evolution to form largescale networks and the protocol methodologies related to IP data networks will be explored.

Professional Practice (040011121)(3:3-0)

This unit provides a foundation for good practice in a variety of contexts. The ability to communicate effectively using different tools and mediums will ensure that practical, research, design, reporting and presentation tasks are undertaken professionally and in accordance with various communication conventions. In everyday life the ability to apply critical reasoning and solve problems are necessary skills to enable task resolution and facilitate effective decision-making. Working with others in a group environment academically or within the workplace is an integral part of everyday life. Therefore, understanding the dynamics of teams in terms of culture, roles and responsibilities will ensure that there is a better understanding and awareness of the importance and value of teamwork. Continuing professional development, self-improvement and working towards various goals is an area that is encouraged in the workplace through the appraisals framework. In addition, professional development extends into higher levels of learning and the need to demonstrate effective research skills and academic reporting skills is also required. Among the topics included in this unit are: the development of communication skills and communication literacy; the use of qualitative and quantitative data to

demonstrate analysis, reasoning and critical thinking; and tasks that require the integration of others within a team-based scenario and planning and problem solving.
Database Design & Development.(040011113)(3:2-3) The aim of this unit is to give students opportunities to develop an understanding of the concepts and issues relating to database design and development, as well as to provide the practical skills to translate that understanding into the design and creation of complex databases. Topics included in this unit are: examination of different design tools and techniques; examination of different development software options; considering the development features of a fully functional robust solution covering data integrity, data validation, data consistency, data security and advanced database querying facilities across multiple tables; appropriate user interfaces for databases and for other externally linked systems; creating complex reports/dashboards, testing the system against the user and system requirements; and elements of complete system documentation.
Information Security (040011232)(3:2-3) The aim of this unit is to provide students with knowledge of security, associated risks and how security breaches impact on business continuity. Students will examine security measures involving access authorization, regulation of use, implementing contingency plans and devising security policies and procedures. This unit introduces students to the detection of threats and vulnerabilities in physical and IT security, and how to manage risks relating to organizational security. Among the topics included in this unit are Network Security design and operational topics, including address translation, DMZ, VPN, firewalls, AV and intrusion detection systems. Remote access will be covered, as will the need for frequent vulnerability testing as part of organizational and security audit compliance.
Planning a Computing Project (040011122)(3:2-3) As computing systems and technologies continually develop so do the ways in which businesses utilise technologies to support their operations and remain competitive. As a computing professional it is important to understand the ways in which technology evolves and how it can be utilised in different sectors. The aim of this unit is to give students an opportunity to demonstrate the research skills required for developing a deeper understanding of a subject and the ability to use evidence to inform decisions. Students will undertake independent research, and investigation of a theme set by Pearson. Students

will also investigate and research an industry sector as outlined in the centre-set project brief. Students will use the outcomes of their research to help them plan a computer-based project and to support recommendations for how the identified business could utilise the tools and technologies identified as part of their research.

Math For Computing (040011111)(3:3-0)

This unit introduces students to the mathematical principles and theory that underpin the computing curriculum. Through a series of case studies, scenarios and task-based assessments students will explore number theory within a variety of scenarios; use applicable probability theory; apply geometrical and vector methodology; and finally evaluate problems concerning differential and integral calculus. Among the topics included in this unit are: prime number theory, sequences and series, probability theory, geometry, differential calculus and integral calculus.

Computing Research Project (040011216)(3:2-3)

The aim of this unit is to offer students the opportunity to engage in sustained research in a specific field of study. The unit enables students to demonstrate the capacity and ability to identify a research theme, to develop research aims, objectives and outcomes, and to present the outcomes of such research in both written and verbal formats. The unit also encourages students to reflect on their engagement in the research process during which recommendations for future, personal development are key learning points.

Business Process Support (040011215)(3:2-3)

This unit introduces students to a range of tools, techniques and technologies used for acquiring data and processing it into meaningful information that can be used to support business functions and processes.

Students will examine how data and information support business processes, the mechanisms to source and utilise data and turn it in to usable, and valuable, information output. Students will explore real-world business problems, the emergence of data science and how the application of data science can be used to support business processes. Finally, students will demonstrate practical application of data science techniques to support real-world business problems.

Data Analytics (040011141)(3:2-3)

This unit will introduce the theoretical foundation of data analytics and a range of data analytic processes and techniques to provide hands-on experience for enhancing students' skills.

Topics included in this unit are: data analytic terminologies, types of data analytics, data exploration and visualisation, understanding data with descriptive, predictive and prescriptive analytics.

As a result students will develop skills such as communication literacy, critical thinking, analysis, reasoning and interpretation which are crucial for gaining employment and developing academic competence.

Machine Learning (040011242)(3:2-3)

This unit will introduce the basic theory of machine learning, the most efficient machine learning algorithms and practical implementation of these algorithms.

Students will gain hands-on experience in getting these algorithms to solve real-world problems.

Topics included in this unit are: the foundations of machine learning, types of learning problems (classification, regression, clustering etc.), taxonomy of machine learning algorithms (supervised learning, unsupervised learning, reinforcement learning), machine learning algorithms (Decision Tree, Naïve Bayes, k-Nearest Neighbour, Support Vector Machine etc.).

On successful completion of this unit students will be able to understand the concept of machine learning, machine learning algorithms, gain hands-on experience in implementing algorithms using a programming language such as C/C++, C#, Java, Python, R, or a machine learning tool such as Weka, KNIME, MS AzureML etc.

As a result students will develop skills such as communication literacy, critical thinking, analysis, reasoning and interpretation, which are crucial for gaining employment and developing academic competence.

Data Structure & Algorithms (040011214)(3:2-3)

This unit introduces students to data structures and how they are used in algorithms, enabling them to design and implement data structures. The unit introduces the specification of abstract data types and explores their use in concrete data structures. Based on this knowledge, students should be able to develop solutions by specifying, designing and implementing data structures and algorithms in a variety of programming paradigms for an identified need. On completion of this unit the student should be able to identify program data requirements, specify abstract data types using a formal notation, translate into concrete data structures and be able to develop, using a programming paradigm, different sorting, searching and navigational algorithms that implement complex data structures and evaluate their effectiveness.

As a result of studying this unit students will develop skills such as communication literacy, critical thinking, analysis, synthesis, reasoning and interpretation, which are crucial for gaining employment and developing academic competence.

Advanced Programming for Data Analysis (040011243)(3:2-3)

This unit is designed to develop the skills required to become a skilled data analyst. It includes investigation of a range of different programming languages, aimed at both data analytics and general use, good development guidelines and the design, development and testing of a sizeable tool to analyse and utilise a large data set. These skills are especially relevant to today's data analyst, data scientist, social researcher, market researcher and others who utilise large data sets in their work.

Applied Analytical Models (040011244)(3:2-3)

This unit introduces students to applied analytical models used in business to discover, interpret and communicate meaningful patterns of data held in silos or data warehouses, and to derive knowledge to gain competitive advantage. Organisations may apply analytical methods and models to predict/prescribe business outcomes and improve performance in diverse areas such as stock control, financial risk and fraud analysis. Analytical models use mathematical algorithms and require extensive computation to process large amounts of data.

As a result they will develop skills such as communication literacy, critical thinking, analysis, reasoning and interpretation which are crucial for gaining employment and developing academic competence.

Big Data Analytics and Visualisation (040011245)(3:2-3)

This unit introduces students to the concepts of big data and visualisation and how this is used for decision making. It explores the industry software solutions available to investigate and present data, before assessing the role and responsibility of data specialists in this current environment. Topics including data driven decision-making, manipulating data and automation, and building ethics into a data-driven culture are examined. Students will demonstrate their use of tools and software to manipulate and prepare a visual presentation for a given data set. They will also assess how data specialists are responsible for adhering to legislation and ensuring data compliance.