



# ST. ALOYSIU'S COLLEGE(AUTONOMOUS), JABALPUR

Reaccredited 'A++' Grade by NAAC(CGPA:3.58/4.00)

College with Potential for Excellence by UGC

DST-FIST Supported & STAR College Scheme by DBT

College with Potential for Excellence by UGC DST-FIST Supported & STAR College Scheme by DBT

**SUBJECT: B.Com**

**B.Com III Semester**

**Paper-Elective**

**Database Management System**

## Course Outcomes

CO. No.	Course Outcomes	Cognitive Level
CO 1	Understand database concepts, applications, structure, need and database terminologies	U, A
CO 2	Know about fundamentals of Relational Algebra and recovery & backup.	K
CO 3	Gain skills to create logical design of databases, including the ER method and normalization approach.	U,A
CO 4	Apply normalization techniques to improve database design	A,A
CO 5	Implementation of different security features to secure the database.	A

## Credit and Marking Scheme

	Credits	Marks		Total Marks
		Internal	External	
<b>Theory</b>	3	40	60	<b>100</b>
<b>Practical</b>	1	40	60	<b>100</b>
<b>Total</b>	<b>4</b>	<b>200</b>		

## Evaluation Scheme

	Marks	
	Internal	External
<b>Theory</b>	3 Internal Exams of 20 Marks (During the Semester) (Best 2 will be taken)	1 External Exams (At the End of Semester)
<b>Practical</b>	3 Internal Exams (During the Semester) (Best 2 will be taken)	1 External Exams (At the End of Semester)





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## Content of the Course

### Theory

No. of Lectures (in hours per week): 2 Hrs. per week

Total No. of Lectures: 60 Hrs.

Maximum Marks: 60

Units	Topics	No. of Lectures
I	Introduction: Database system concepts, Data base system, Advantages of database systems; Data Architecture of data system: View/Schema, logical, conceptual and physical and their interrelationship, data dictionary, Data base administrator. Types of Data Models:- Relational, Hierarchical and Network Model their advantages and disadvantages	15
II	Entity Relationship Model as a tool of conceptual design: Entities &Entity set, Relationship & Relationship set, Attributes, Mapping Constraints, Keys, Entity-Relationship diagram (E-R diagram) : Strong & weak entities, Generalization, Specialization, Aggregation, Reducing ER diagram to tables.	16
III	Normalization and SQL concept :- Normalization: First, Second, Third & BCNF Normal Forms, Introduction to SQL, tuple, attribute, Data types, key constraints: - primary key, Candidate key, Alternate Key, Unique Key, Integrity rules : Entity integrity, Referential integrity rule. SQL Commands: -, DDL, DML, DCL, TCL syntax and examples, select query with all the clauses. Like Predicate, Operator (Between, In, Not in).	18
IV	Advance SQL: - Views in SQL, SQL join operations, Sub Queries, Aggregate Functions. Introduction to PL/SQL: - PL/SQL structure, Cursors, Triggers, Stored Procedures and functions.	11

## References

### Text Books:

- “SQL, PLSQL The programming Language of Oracle 4<sup>th</sup> Edition by Ivan Bayross, BPB Publication

### Reference Books:

1. An Introduction to Database System by Bipin Desai.
  2. “Database System Concepts” by Abraham Silberschatz and S Sudarshan
  3. “Database Management Systems” by Raghu Ramakrishnan
  4. “Fundamentals of Database Systems” by RElmasri and SNavathe
  5. “Database Management Systems” by Johannes Gehrke and Raghu Ramakrishnan
- Books published by M.P. Hindi Granth Academy, Bhopal



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## Web Links:

1. <https://www.greatlearning.in/academy/learn-for-free/courses/database-management-systems-dbms>
2. <https://www.learnvern.com/course/database-management-tutorial-hindi>
3. <https://www.geeksforgeeks.org/dbms/>
4. <https://www.tutorialspoint.com/database-tutorials.htm>
5. <https://www.iavatpoint.com/dbms-tutorial>
6. <https://beginnersbook.com/2015/04/dbms-tutorial>
7. <https://www.studytonight.com/dbms/>
8. <https://www.w3schools.in/dbms/>
9. <https://www.g.com/dbms-tutorial.html>
10. <https://www.tutorialcuy.com/dbms>
11. <http://i/yww.mphindiqranthacademy.org/>

## List of Practical

1. Create a table with name “Employee” having following fields:-

Field Name	Data Type	Size	Constraint
Eid	Number	10	Primary Key
Ename	Char	20	Not null
Designation	Char	30	Not null
Age	Number	10	Not null
City	Varchar2	25	Not null
Department no	Varchar2	30	Not null
Salary	Decimal	(7,2)	Not null
BankName	Varchar2	30	Not null

Insert the following records in above table structure .

Eid	Ename	Designation	Age	City	Department	Salary	BankName
101	Ford	Manager	24	Mumbai	D1	67820.50	HDFC
102	Jenny	Asst. Mng .	30	Delhi	D1	45750.40	Axis
103	Mary	Clerk	35	Goa	D1	32000.00	Canara
104	Smith	Clerk	28	Madras	D1	28000.00	FBC
105	James	Clerk	27	Mumbai	D1	29000.00	ICICI
106	Anny	Clerk	32	Kolkata	D1	25000.00	Axis
107	Jones	Clerk	34	Delhi	D1	27000.00	HDFC
108	Michal	Clerk	31	Goa	D1	24000.00	FBC



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## **Execute the following queries**

1. WAQ to insert one new record in the table.
2. WAQ to change the Ename from Anny to Robin.
3. Delete any one record from table.
4. Add a new column in the employee table with name "email id" having datatype varchar2(15).
5. WAQ to display the entire table using DQL Command .
6. WAQ to display the specific records whose age is greater then 30 using where clause.
7. Display only the city column using where clause.
8. Display the name of employee whose name starts with "J" using predicate.
9. WAQ to display the record of employee whose second letter of name is o.
10. WAQ to find the name of the employees whose salary lies between 24000.00 to 28000.00
11. WAQ to list the number of employees whose name is not "Jenny", "Mary", "Ford".
12. Write a query to calculate the total salary, average and find minimum, maximum , and and by using a function.
13. WAQ to display the entire record of employees where salary is greater than 27000 using sub queries.
14. Write a query to rename the name of the table
15. WAQ to change the datatype varchar2 to char datatype of field city using alter command.
16. Write a program in PLSQL to add two numbers .
17. Write a program in PLSQL to check number is even or odd.
18. Write a program in PLSQL to find greatest of three numbers.





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**B.Com IV Semester**

**Paper:- Elective**

**Subject:- Introduction to ASP.NET & C#**

## Course Outcomes

CO. No.	Course Outcomes	Cognitive Level
CO 1	To learn fundamentals of .net framework	An
CO 2	To enrich knowledge about Windows Forms, Controls and ASP.NET based applications.	An, Un
CO 3	To gain proficiency in C# by building stand-alone applications in the .NET framework using C#.	Un, App
CO 4	To build data-driven applications using the .NET Framework, C#, and ADO.NET	Un, App
CO 5	To acquire skills to create web-based applications and Reports using .net technologies	Ap, Ev.

## Credit and Marking Scheme

	Credits	Marks		Total Marks
		Internal	External	
<b>Theory</b>	<b>3</b>	<b>40</b>	<b>60</b>	<b>100</b>
<b>Practical</b>	<b>1</b>	<b>40</b>	<b>60</b>	<b>100</b>
<b>Total</b>	<b>4</b>		<b>200</b>	

## Evaluation Scheme

	Marks	
	Internal	External
<b>Theory</b>	4 Internal Exams of 10 Marks (During the Semester)	1 External Exams (At the End of Semester)





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## Content of the Course

### Theory

No. of Lectures (in hours per week): 2 Hrs. per week

Total No. of Lectures: 45

Maximum Marks: 60

Units	Topics	No. of Lectures
I	<b>Overview of OOPs:</b> Class, Object, Encapsulation, inheritance, polymorphism, abstraction, Understanding Constructors and instance Variables Handling and Using Interfaces. Preprocessor directives, Exception handling, Understanding Delegates in c#. <b>Introduction to .NET Framework:</b> Programming Platform .NET Framework, .NET Architecture, CLR, the Just-in-Time Compiler	
II	<b>Working with C#:-</b> Introduction to C#.,The Basics and Console Applications in C#, <b>Windows Forms and Controls:</b> The Windows Forms Model, Creating Windows Forms, Windows Forms Properties and Events, Windows Form Controls, Menus - Dialogs - ToolTips.Visual development & event driven Programming Methods and events. Data type, type conversion. Variables constants, operators, Decision making, Loops, Arrays.	11
III	<b>Introduction to ASP.NET:-</b> ASP.NET Life Cycle, page life cycle phases, Understanding ASP.NET Controls, Introduction of Web forms, Web form controls ,server controls, user controls, HTML controls ,Navigation controls.	12
IV	<b>Session Management :-</b> Event Handling- Application and Session Events, Page and Control Events. Validation controls: RequiredFieldvalidator, RangeValidator, CompareValidator, RegularExpressionValidator, CustomValidator, ValidationSummary <b>Database connectivity in ASP.NET:</b> Architecture of ADO.NET, Connection Class, Command Class, Data Adapter Class, and Dataset Class, Display data on web form using Data bound controls.	11



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## References

### Text Books:

1. ASP .NET Unleashed C# programming — Wrox Publication.
2. C# Programming Black Book by Matt Talles.
3. VB.NET Programming Black Book by st.evenholzner —dreamteef publications
4. Mastering VB.NET by Evangelospetroustos- BPB publications
5. Introduction to .NET framework-Worx publication
6. Books published by M.P. Hindi Granth Academy, Bhopal

### Web Links:

1. <https://www.c-sharpcorner.com/UploadFile/18585c/overview-of->
3. <https://www.dotnettricks.com/1eaén/designpatterns/adapter-design-pattern-dotnet>
4. <http://www.mphindieranthacademy.org/>

## List of Practical

1. Develop a console application in `c#` to find the addition of two numbers.
2. Develop a console application in `c#` to find the simple interest.
3. Develop a console application in `c#` to find the factorial of any `n` entered number.
4. Develop a console application in `c#` to display a fibonacci series.
5. Develop a console application in `c#` to check whether a number is even or odd.
6. Develop a console application in `c#` to implement array.
7. Develop a console application in `c#` to find the product and division of entered number.
8. Write a program to declare a class “staff” having data of the members such as name and post. Accept this data and display the result.
9. Define a class having “salary” of members displaying variables such as BASIC, DA , HRA. Develop a window application to find the total salary of the employee.
10. Develop a window application using text box,check box, radio button, list box, labels and validation.
11. Develop a ASP.NET dynamic website for student registration detail.



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## B.Com V<sup>th</sup> Semester (Computer Application)

### Discipline Specific Elective

### Artificial Intelligence for Business

#### Course Outcomes

CO. No.	Course Outcomes	Cognitive Level
CO 1	Understand the fundamental concepts and history of AI.	Understanding
CO 2	Differentiate between various types of machine learning and deep learning techniques	Understanding, Analyse
CO 3	Apply NLP techniques to real-world business problems.	Applying
CO 4	Implement computer vision solutions for business applications.	Applying
CO 5	Identify and solve business problems using AI solutions.	Understanding, Analyse, Apply
CO 6	Build and evaluate AI models using popular Python libraries	Apply

#### Credit and Marking Scheme

	Credits	Marks		Total Marks
		Internal	External	
<b>Theory</b>	3	40	60	100
<b>Practical</b>	1	40	60	100
<b>Total</b>	4	200		

#### Evaluation Scheme

	Marks	
	Internal	External
<b>Theory</b>	4 Internal Exams of 10 Marks (During the Semester)	1 External Exams (At the End of Semester)





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## Content of the Course

### Theory

No. of Lectures (in hours per week): 2 Hrs. per week

Total No. of Lectures: 60 Hrs.

Maximum Marks: 60

Units	Topics	No. of Lectures
I	Introduction of Artificial Intelligence, Foundation of AI, History, AI in Business Applications – AI for Marketing: Customer Segmentation, Personalized Recommendations, Sentiment Analysis, AI For operations and Supply Chain.	12
II	Machine Learning: Supervised vs. unsupervised Learning, ETL process Data Cleaning: Noisy data, duplicate data, ML technique: Association: Apriori Algorithm. Classification: Naïve Bayes, Decision tree, Clustering: K-Means, Hierarchical Clustering.	12
III	Arrays in Python, types of arrays Basic Python Programming, data types, Lists, Dictionaries, Tuple , Control Statements: Conditional control statements - if, If-else, If-elseif-else, Loop control statements- for, while, Functions in python and types of functions, In built functions (Arithmetic and String), Operators in python and Types.	12
IV	Data visualization using Matplotlib, Creating Data Frames , Reading and uploading the CSV file, Dataset Manipulation using Pandas Concatenation and Merging of dataframe, Numpy, Mathematical operations on Numpy Array, Reshaping of Numpy Array Regression and Correlation	12
V	NLP used in Business Ethical Consideration, Python processing with unstructured data, Introduction to NLP techniques, Tokenization :- Character, Word and Sentence ,stemming and lemmatization, parts of speech using NLTK, applications of NLP in business, Basics of Recommendation system.	12



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## References

### Textbook :

1. Artificial Intelligence Basics: Tom Taulli
2. A first course in Artificial Intelligence – Deepak Khemani
3. Artificial Intelligence for Business, 2nd Edition – Doug Rose
4. Artificial Intelligence For Business – An Implementation Guide Containing Practical and Industry–Specific Case Studies, Edited By Hemachandran K , Raul V. Rodriguez
5. Applied Artificial Intelligence in Business – Leong Chan, Liliya Hogaboam, Renzhi Cao
6. Python Programming – 3 Books in 1, Ryan Turner
7. Essentials of Python for Artificial Intelligence and Machine Learning - Pramod Gupta, Anupam Bagchi (Springer)
8. NLP For Business Analysts – Developing Agile mindset and behaviors, Peter Parkes
9. Scientific Visualization: Python + Matplotlib (2021) by Nicolas P. Rougier
10. Matplotlib for Python Developers by Sandro Tosi

### Web Links:

1. <https://www.geeksforgeeks.org/artificial-intelligence-an-introduction/>
2. <https://www.youtube.com/watch?v=IyYmgn2O6aM>
3. <https://www.youtube.com/watch?v=VNz3KGoAhG4>
4. <https://study.com/academy/lesson/video/types-of-artificial-intelligence.html>

## List of Practical

1. Write a program to demonstrate different number data types in Python.
2. Write a program to perform different Arithmetic Operations on numbers in Python.
3. Implement data manipulation tasks using Pandas and numerical computations using NumPy.
4. Program to find the number is even or odd using if contral statement .
5. Program to find the largest number among three numbers using if-elif-else statement.
6. WAP to calculate the simple interest.
7. Perform arithmetic operations on arrays using Numpy.
8. Program to Concatinate and Merge two dataframes
9. Reading and writing CSV file ,Load and manipulate a dataset using Pandas.
10. Create and manipulate lists and dictionaries.
11. Implement conditional statements and loops by displaying counting in ascending or descending order.
12. Create a simple line plot between x and y axis using Matplotlib.
13. Create a bar chart to compare the sales of different products.
- 14 Write a Python program to create a user defined function
- 15 Program to perform the character and word tokenization using NLTK



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## St.Aloysius' College(Autonomous) Jabalpur

B. Com VI Semester

Elective- BUSINESS ANALYTICS

### Course Outcomes

CO. No.	Course Outcomes	Cognitive Level
CO1	Understand the basic concepts and interdisciplinary nature of AI.	U
CO2	Analyze the importance of data quality and techniques for dealing with missing or incomplete data.	An
CO3	Apply exploratory data analysis (EDA), data wrangling, and feature engineering techniques in business scenarios.	A
CO4	Implement machine learning algorithms, including classification, clustering, and association, to solve business problems using Python.	A
CO5	Apply predictive analytics techniques, such as correlation, linear regression, and time series analysis, to real-world business forecasting problems.	A

### Credit and Marking Scheme

	Credits	Marks		Total Marks
		Internal	External	
Theory	4	40	60	100
Practical	2	40	60	100
<b>Total</b>	<b>6</b>			<b>200</b>

### Evaluation Scheme

	Marks	
	Internal	External
Theory	3 Internal Exam of 20 Marks During the Semester	1 External Exam end of the Semester
Practical	3 Internal Exam during the semester	1 External Exam end of the semester



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## Content of the Course

### Theory

No. of Lectures (in hours per week): 2 Hrs. per week

Total No. of Lectures: 45

Maximum Marks: 60

Unit s	Topics	No. of Lectur es
I	<b>Basic Concepts about Programming Language:</b> What is Programming, Types of Programming Languages, Features of Python Programming, What is IDE,, Data Types:- int, float, list, tuple, set, Dictionary ,Functions and its types:- Predefined Functions and User Defined Functions Control Statements, Types of Operators, Control Statements & Types.	8
II	<b>Concept about Machine Learning :-</b> What is Data and types of Data in Machine Learning, What is Machine Learning, Types of Machine Learning, ETL Process, Data Cleaning importance of data quality, dealing with missing or incomplete data, machine learning techniques in business, Association rule mining, Apriori algorithm , Frequent pattern mining.	8
III	<b>Predictive modelling in business:</b> Basic concept of classification, Naïve Bayes, Decision tree, linear regression and correlation, Introduction to clustering, Partition Based Clustering :- K Means Clustering , Hierarchical Clustering:- Agglomerative (Bottom-Up) & Divisive (Top-Down) Clustering	10
IV	Data visualization using matplotlib, numpy, mathematical and logical operations on Numpy ,Python date and time functions Pandas, creating dataframes, creating series, operations with dataframe and series NLP used in business, case studies	10
V	Data Wrangling , Data Web Scraping, Python processing with unstructured data,introduction to NLP techniques, Word tokenization , stemming and lemmatization, parts of speech using NLTK, applications of NLP in business.	9



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## References

### Text Books:

1. Turban E, Armson, JE, Liang, TP & Sharda, Decision support and Business Intelligence Systems, 8<sup>th</sup> Edition, John Wiley & Sons, 2007
2. Frank J. Ohlhorst, Big Data Analytics, 1st Edition, Wiley, 2012.
3. Efraim Turban, Ramesh Sharda, Jay Aronson, David King, Decision Support and Business Intelligence Systems, 9th Edition, Pearson Education, 2009.

### Essential Reading / Recommended Reading

- Microsoft Office 2007 Business Intelligence- Reporting, Analysis, and Measurement from the Desktop, Doug Harts, TATA McGraw-Hill Edition, 2008
- Data Mining for Business Intelligence: Concepts, Techniques, and Applications in Microsoft Office Excel with XLMiner, Galit Shmueli, Nitin R. Patel, Peter C. Bruce, Wiley Publication, 2010
- The New Science of Retailing: How Analytics are Transforming the Supply Chain and Improving Performance, Ananth Raman, Marshall Fisher, HBR Book Press, 2010
- Data Mining: Concepts and Techniques”, Morgan Kaufmann Publication, 3<sup>rd</sup> Edition, 2011.
- Decision Support and Business Intelligence Systems, Turban, E., Aronson, JE., Liang, T. Sharda R, Prentice Hall Publisher, 10<sup>th</sup> Edition, 2011
- Data Science for Business – What you need to know about data mining and data-analytic thinking, Foster Provost, Tom Fawcett, O’ Reilly Media Publication, 2013
- IDEA from CASEWARE



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## List of Practical

1. Write a program in python to find the addition of two integer numbers entered by the user.
2. Write a program in python to find the calculate the simple interest and input should be entered by the user.
3. Write a python program to find the eligibility of a candidate for voting using control statements.
4. Write a program in python to create list, tuple, set and dictionary and apply operations.
5. Write a program in python to plot the graph between product and price using matplotlib library.
6. Clean a dataset by handling missing values, removing duplicates, and creating new features using Pandas.
7. Create a bar chart to compare the sales of different products.
8. Create a pie chart to show the market share of different companies.
9. Write a program in python to perform mathematical operations on array using NumPy.
10. Apply and create frequent patterns and association rules using Apriori (case study)
11. Apply k-means clustering in python
12. Conduct sentiment analysis on product reviews, classifying them as positive, negative, or neutral using NLTK and Scikit-learn.
13. Use linear regression to predict a business outcome (e.g., sales) and analyze the relationships between variables.

