



मेडी-केप्स विश्वविद्यालय, इंदौर

Medi-Caps University, Indore

## Syllabus

Course Code	Course Name	Hours per Week			Total	
		L	T	P	Hrs.	Credits
BC3CO13	Database Management Systems	3	0	4	7	5

### Course Objectives:

1. List and explain the fundamental concepts of a relational database system.
2. Develop the logical design of the database using data modeling concepts such as entity-relationship diagrams
3. Analyze database requirements and determine the entities involved in the system and their relationship to one another.
4. Create a relational database using a relational database package.
5. Manipulate a database using SQL.
6. Normalization and its importance
7. ACID properties

**Prerequisites :** Nil

**Co-requisites :** Nil

### Curriculum:

#### Unit – I Introduction

Introduction of DBMS, advantage of DBMS approach, various views of data, data independence, schema and sub-schema, primary concepts of data models, Database languages, Database administrator and users, overall system architecture.

#### Unit – II ER model

Basic concepts, design issues, mapping constraint, keys, ER diagram, weak and strong entity sets, specialization and generalization, aggregation, inheritance, design of ER schema, reduction of ER schema to tables.

#### Unit –III Domains, Relations and Keys

Domains, relations, kind of relations, relational database, various types of keys, candidate, primary, alternate and foreign keys.

Relational Algebra & SQL: The structure, relational algebra operations, idea of relational calculus, basic structure and operations of SQL.

#### Unit –IV Normalization

The purpose of normalization, how normalization supports database design, data redundancy and update anomalies, functional dependencies, characteristics of functional dependencies,

identifying functional dependencies, identifying the primary key for a relation using functional dependencies, the process of normalization, first normal form (1NF), second normal form (2NF), third normal form (3NF), general definitions of 2NF, 3NF, and BCNF.

### **Unit – V Transaction, concurrency and Recovery**

Basic concepts, ACID properties, transaction states, basic idea of serializability, basic idea of concurrency control, basic idea of deadlock, recovery and atomicity - log based recovery, deferred database modification, immediate database modification, checkpoints.

#### **List of Practicals:**

Q.1 The following tables form part of a database held in a relational DBMS:

**Hotel** (hotelNo, hotelName, city)

**Room** (roomNo, hotelNo, type, price)

**Booking** (hotelNo, guestNo, dateFrom, dateTo, roomNo)

**Guest** (guestNo, guestName, guestAddress)

Where **Hotel** contains hotel details and hotelNo is the primary key;

**Room** contains room details for each hotel and (roomNo, hotelNo) forms the primary key;

**Booking** contains details of bookings and (hotelNo, guestNo, dateFrom) forms the primary key;

**Guest** contains guest details and guestNo is the primary key.

#### **Simple Queries**

1. List full details of all hotels.
2. List full details of all hotels in London.
3. List the names and addresses of all guest living in London, alphabetically ordered by name.
4. List all double or family rooms with a price below \$40.00 per night, in ascending order of price.
5. List the names for which no dateTo has been specified.
6. List all single rooms with a price below \$40.00 per night.
7. List the name and cities of all guests.
8. List the price and type of all rooms at the Grosvenor Hotel.
9. List the guests currently staying at the Grosvenor Hotel.
10. List the details of all rooms at the Grosvenor Hotel, including the names of the guest staying in the room, if the room is occupied.
11. List the guest details (guestNo, guestName, and guestAddress) of all guests staying at the Grosvenor Hotel.

## Grouping

1. List the number of rooms in each hotel.
2. List the number of rooms in each hotel in London.
3. What is the average number of bookings for each hotel in August?
4. What is the most commonly booked room type for each hotel in London?
5. What is the lost income from unoccupied rooms at each hotel today?

Q. 2 The following tables form part of a database held in a relational DBMS:

**S SUPPLIER**

Field name	Data type	Constraints
SNO	Varchar(5)	Primary key
SNAME	varchar(25)	NOT NULL
STATUS	int	NOT NULL
CITY	varchar(20)	NOT NULL

**P PART**

Field name	Data type	Constraints
PNO	Varchar(6)	Primary key
PNAME	varchar(25)	NOT NULL
COLOR	varchar(10)	NOT NULL
WEIGHT	Numeric(5,1)	NOT NULL
CITY	varchar(20)	NOT NULL

**J PROJECT**

Field name	Data type	Constraints
JNO	Varchar(6)	Primary key
JNAME	varchar(25)	NOT NULL
CITY	varchar(20)	NOT NULL

**SPJ SHIPMENT**

Field name	Data type	Constraints
SNO	Varchar(5)	NOT NULL, Foreign key SNO references S
PNO	Varchar(6)	NOT NULL, Foreign key PNO references P
JNO	varchar(6)	NOT NULL, Foreign key JNO references J
QTY	int	NOT NULL

**S**

Sno	SNAME	STATUS	CITY
S1	SMITH	20	LONDON
S2	JONES	10	PARRIS

S3	BLAKE	30	PARRIS
S4	CLARK	20	LONDON
S5	ADAMS	30	ATHENS

**P**

Pno	PNAME	COLOR	WEIGHT	CITY
P1	NUT	RED	12	LONDON
P2	BOLT	GREEN	17	PARIS
P3	SCREW	BLUE	17	ROME
P4	SCREW	RED	14	LONDON
P5	CAM	BLUE	12	PARIS
P6	COG	RED	19	LONDON

**J**

Jno	JNAME	CITY
J1	SORTER	PARIS
J2	DISPLAY	ROME
J3	OCR	ATHENS
J4	CONSOLE	ATHENS
J5	RAID	LONDON
J6	EDS	OSLO
J7	TAPE	LONDON

**SPJ**

SNO	PNO	JNO	QTY
S1	P1	J1	200
S1	P1	J4	700
S2	P3	J1	400
S2	P3	J2	200
S2	P3	J3	200
S2	P3	J4	500
S2	P3	J5	600
S2	P3	J6	400
S2	P3	J7	800
S2	P5	J2	100
S3	P3	J1	200
S3	P4	J2	500
S4	P6	J3	300
S4	P6	J7	300
S5	P2	J2	200
S5	P2	J4	100
S5	P5	J5	500
S5	P5	J7	100
S5	P6	J2	200
S5	P1	J4	100
S5	P3	J4	200
S5	P4	J4	800
S5	P5	J4	400
S5	P6	J4	500

Figure: The supplier-parts-project database (Sample Values)

**Write SQL Queries for the above database:**

- 1 Get Full details of all projects.
- 2 Get Full details of all projects in London.
- 3 Get supplier numbers for suppliers who supply projects J1.
- 4 Get all shipments where the quantity is in the range 300 to 750 inclusive.

- 5 Get all part-color/part-city pairs. Note : Here and subsequently, the terms “all” means “all currently represented in the database, “ not “all possible”.
- 6 Get all supplier -number/part- number/project- number triples such that the indicated supplier, part and project are all collocated (i.e. all in the same city).
- 7 Get all supplier -number/part- number/project- number triples such that the indicated supplier, part and project are not all collocated.
- 8 Get all supplier -number/part- number/project- number triples such that no two of the indicated supplier, part and project are collocated.
- 9 Get full details for parts supplied by the supplier in the London.
- 10 Get part numbers for parts supplied by a supplier in London to a project in London.
- 11 Get all pairs of city names such that a supplier in the first city supplies a project in the second city.
- 12 Get part numbers for parts supplied to any project by a supplier in the same city as that project.
- 13 Get project numbers for projects supplied by at least one supplier not in the same city.
- 14 Get all pairs of part numbers such that some supplier supplies both the indicated parts.
- 15 Get the total number of projects supplied by supplier S1.
- 16 Get the total quantity of part P1 supplied by supplier S1.
- 17 For each part being supplied to a project, get the part number, the project number, and the corresponding total quantity.
- 18 Get part numbers of parts supplied to some project in an average quantity of more than 350.
- 19 Get project names for projects supplied by supplier S1.
- 20 Get colors of parts supplied by supplier S1.
- 21 Get part numbers for parts supplied to any project in London.
- 22 Get project numbers for projects using at least one part available from supplier S1.
- 23 Get supplier numbers for suppliers supplying at least one part supplied by at least one supplier who supplies at least one red part.
- 24 Get supplier numbers for suppliers with a status lower than that of supplier S1.
- 25 Get project numbers for projects whose city is first in the alphabetic list of such cities
- 26 Get project numbers for projects supplied with part P1 in an average quantity greater than the greatest quantity in which any part is supplied to project J1
- 27 Get supplier numbers for suppliers supplying some project with part P1 in a quantity greater than the average shipment quantity of part P1 for that project.
- 28 Get project numbers for project not supplied with any red part by any London supplier.
- 29 Get project numbers for projects supplied entirely by supplier SI.

- 30 Get part numbers for parts supplied to all projects in London.
- 31 Get supplier numbers for suppliers who supply the same part to all projects.
- 32 Get project numbers for projects supplied with at least all parts available from supplier SI.
- 33 Get all cities in which at least one supplier, Part. Or project is located.
- 34 Get part numbers for parts that are supplied either by London supplier or to a London project.
- 35 Get supplier-number/part-number pairs such that the indicated supplier does not supply the indicated part.
- 36 Get all pairs of supplier numbers, S<sub>x</sub> and S<sub>y</sub> say. Such that S<sub>x</sub> and S<sub>y</sub> supply exactly the same set of parts each. Note: For simplicity, you might want to use the original suppliers-and-part data-base for this exercise, instead of the expanded suppliers-part-projects database.
- 37 Get a “grouped” version of all shipment showing, for each suppliers-number/part-number pair, the corresponding project numbers and quantities in the form of a binary relation.

**Project:**

Optional.

**Course Outcomes:**

- A. Differentiate database systems from file systems by enumerating the features provided by database systems and describe each in both function and benefit.
- B. Demonstrate an understanding of the relational data model.
- C. Formulate, using SQL, solutions to a broad range of query and data update problems.
- D. Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database.
- E. ACID Properties and conceptual knowledge of transaction ,recovery and concurrency.

**Text Books:**

1. *Database system concepts*, Silberschatz, H. F. Korth, and S. Sudershan, *McGraw Hill*.
2. *Fundamentals of Database systems*, Elmasri and Navathe, *Pearson Education*.
3. *Modern database system*, Fred R McFadden, *Prentice Hall*.

**Reference Books:**

1. *Database Systems: A Practical Approach to Design, Implementation, and Management*, T. Connolly and C. Begg, *Addison-Wesley*.
2. *An introduction to Database Systems*, C.J Date, *Pearson Education*.
3. *An introduction to Database systems*, B.C. Desai., *BPB Publication*.
4. *Database Systems*, Raghurama Krishnan, *TMH*.
5. *Modern Database Management*, Jeffery A Hoffer , V.Ramesh, Heikki Topi, *Pearson*.

**Web Reference:**

1. <http://nptel.ac.in/courses/106106093/>

**Open Learning Course:**

1. <http://nptel.ac.in/courses/106106093/>



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## Syllabus

Course Code	Course Name	Hours per Week			Total	
		L	T	P	Hrs.	Credits
BC3CO14	Computer Networks	3	0	2		4

### Course Objectives:

1. To acquaint the students with network concepts.
2. Build an understanding of the fundamental concepts of computer networking.
3. Familiarize the student with the basic taxonomy and terminology of the computer networking area.
4. Introduce the student to advanced networking concepts, preparing the student for entry advanced courses in computer networking.
5. Allow the student to gain expertise in some specific areas of networking such as the design and maintenance of individual networks.

**Prerequisites :** Computer knowledge introductory level

**Co-requisites :** Nil

### Curriculum:

#### Unit-I Introduction to computer networks and Internet:

Understanding of Network and Internet, Network Hardware, Network Software, Reference Models: OSI, TCP/IP their protocols layers and models.

#### Unit-II Physical Layer

The theoretical basis for data communication, Guided transmission Media: Magnetic Media, Twisted Pairs, Coaxial Cable, Fiber Optics; Wireless Transmission: The Electromagnetic Spectrum, Radio Transmission, Microwave Transmission, Infrared Transmission, Light Transmission; The Public Switched Telephone Network.

#### Unit-III Data Link Layer

Data link layer design issues; Error correcting codes, Error detecting codes, Elementary data link protocols: A Utopian Simplex Protocol, A Simplex Stop-and- Wait Protocol for an Error-Free Channel, A Simplex Stop-and- Wait Protocol for a Noisy Channel; Sliding window protocols: A One-Bit Sliding Window Protocol, A Protocol Using Go-Back-N, A Protocol Using Selective Repeat, The channel allocation problem; Multiple access protocol, Ethernet, WLANs, Bluetooth.

#### Unit-IV Network Layer

Network Layer Design Issues: Store-and- Forward Packet Switching, Services Provided to the Transport Layer, Implementation of Connectionless Service, Implementation of Connection-Oriented Service; Routing Algorithms: Shortest Path Algorithm, Flooding,

Distance Vector Routing, Link State Routing, Hierarchical Routing, Broadcast Routing, Multicast Routing, Routing in Ad Hoc Networks; Congestion Control Algorithms: Approaches to Congestion Control, Traffic-Aware Routing; IP Address:IPv4, IPv6.

### **Unit-V Transport and Application Layer**

Transport services, Transport Protocols, Internet Transport Protocols UDP, TC, Congestion Control algorithms.

Application Layer Design Issues, Domain Name System, Electronic Mail, World Wide Web Multimedia, HTTP, SMTP, Cryptography, and Digital Signature.

#### **List of Practicals:**

1. To compare IPv4 and IPv6.
2. To determine the hardware address corresponding to the input IP address.
3. To implement the routing algorithm(link state routing).
4. Study of LAN transmission media's, topologies, LAN standards.
5. Study of OSI model.
6. Study of TCP/IP; Internet.
7. Study on client-server architecture.
8. Study of Header of TCP/ UDP.
9. Case Study of Campus Network.
10. Study of DNS, SMTP, FTP and other protocols.

#### **Project:**

Optional.

#### **Course Outcomes:**

1. Understand basic computer network technology.
2. Understand Data Communications System and its components.
3. Identify the different types of network topologies and protocols.
4. Enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each layer.
5. Identify the different types of network devices and their functions within a network.
6. Understand the skills of subnetting and routing mechanisms.
7. Familiarity with the basic protocols of computer networks, and how they can be used to assist in network design and implementation..

#### **Text Books:**

1. *Computer Networks*, Andrew S. Tanenbaum, *PHI*.
2. *Computer Networking: A Top-Down Approach*, Jim Kurose, *Pearson*.
3. *Computer Networks: A Systems Approach*, Bruce S. Davie and Larry L. Peterson, *PHI*.

#### **Reference Books:**

1. *Data Communications and Networking*, Behrouz A. Forouzan, *Mc-Graw Hills*.
2. *Computer Networks*, Andrew S. Tanenbaum and David J. Wetherall, *Pearson*.
3. *Computer Networks and Internets*, Douglas E. Comer, *Pearson*.
4. *Computer Networking: Principles, Protocols and Practice Textbook*, Olivier Bonaventure, *Cisco Press*.
5. *Introduction to Computer Networks and Cyber-Security*, Chwan-Hwa Wu and J. David



Irwin, *CRC Press*.

**Web Source:**

1. <https://www.geeksforgeeks.org/computer-network-tutorials/>
2. <https://study.com/academy/lesson/>
3. <https://www.lifewire.com/what-is-computer-networking-816249>
4. [https://www.tutorialspoint.com/computer\\_fundamentals/computer\\_networking.htm](https://www.tutorialspoint.com/computer_fundamentals/computer_networking.htm)
5. <https://www.studytonight.com/computer-networks/overview-of-computer-networks>



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Syllabus

Course Code	Course Name	Hours per Week			Total	
		L	T	P	Hrs.	Credits
BC3CO15	Mathematics-IV	3	1	0	4	4

**Course Objectives:**

1. To equip the students with the knowledge of basic properties of different forms of group.
2. To provide knowledge of Normal sub group, Quotient groups, homomorphism and isomorphism of groups.
3. To provide knowledge of rings and fields.
4. To provide knowledge of vector spaces, subspaces and their basic properties, Finite dimensional vector spaces.
5. To provide the understanding of concept of Linear transformations and their representation as matrices as well as Eigen values and eigen vectors of a linear transformation.

**Prerequisites:** Students must have a sound background in mathematics.

**Co-requisites:** Nil

**Curriculum:**

**Unit-I Abstract Algebra-I**

Definition and basic properties of group, Order of an element of a group, Abelian groups, Subgroups, Algebra of subgroups, Cyclic groups and their simple properties, Coset decomposition and related theorems, Lagrange's theorem and its consequences.

**Unit-II Abstract Algebra-II**

Normal sub group, Quotient groups, homomorphism and isomorphism of groups (definition only), Kernel of homomorphism of groups, fundamental theorem of homomorphism of groups, Permutation groups (even and odd permutations), Alternating groups, Cayley's theorem.

**Unit-III Abstract Algebra-III**

Definition and types Rings, cancellation law of Rings, property of Rings, Subring, Integral Domain, Field, Subfield with basic theorem. Division Ring, Ring Homomorphism, Polynomial Ring.

**Unit-IV Linear Algebra-I:**

Definition and examples of vector spaces, subspaces, Sum and direct sum of subspaces, Linear span, Linear dependence, independence and their basic properties, Basis, Finite dimensional vector spaces, Existence theorem for basis, Invariance of the number of elements of a basis set, Dimension, Dimension of sums of vector subspaces.

**Unit-V Linear Algebra-II:**

Linear transformations and their representation as matrices, the algebra of linear transformations, The rank- nullity theorem, Eigen values and Eigen vectors of a linear transformation, Diagonalisation, Quotient space and its dimension.

**Case Studies:**

Not Applicable.

**List of Practical's:**

Not Applicable.

**Project:**

Optional.

**Course Outcomes:**

- A. Students will be able to understand the concepts of various groups.
- B. Students will be able to apply the fundamental theorem of homomorphism and permutation of group.
- C. Students will be able to apply basic results of Ring theory, and the significance of unique factorization in Rings and Integral domains.
- D. Students will be able to understand the concepts of vector space and subspace. Demonstrate understanding of linear independence, span, and basis.
- E. Students will be able to apply principles of matrix algebra to linear transformations.

**Texts Books:**

1. *Topics in Algebra, I*, Wiley Eastern Ltd., New Delhi, 1977.
2. *Murray R. Spiegel*, , Schaum Publishing Co., New York.
3. *Theory and Problems of Advanced Calculus, Linear Algebra*, K. Hoffman and R. Kunze, Prentice Hall Englewood Cliffs, New Jersey.1971.

**References Books:**

1. *A first Course in Abstract Algebra*, Jhon B. Fraleigh, *Pearson Education India*, 2003.
2. *N. Jacobson, Basis Algebra, Vols, I & II*. W.H. Freeman, 1980 (also published by *Hindustan Publishing Company*.)

**Web Source:**

1. <http://nptel.ac.in/courses/104104080/>
2. <http://nptel.ac.in/courses/111106098/>

**Open Learning Source:**

1. <https://swayam.gov.in/courses/public>
2. <http://nptel.ac.in/course.php>



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## Syllabus

S. No	Subject Code	Subject Name	Hours per Week			Total Hrs.	Total Credits
			L	T	P		
1	BC3CO16	Physics-IV	4	0	2	6	5

### Course Objectives:

1. To provide students with a thorough understanding of the basic concepts of physics and the methods scientists use to explore natural phenomena, including observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence, and employment of mathematical analysis
2. To instruct students the fundamental laws of physics and the application of scientific data ,concepts and models for use in the natural sciences and real world situations
3. To provide students with problem solving skills by an approach that describes physical
4. Phenomena with relevant mathematical models and formulae
5. To develop the student's mathematical ability to manipulate formulae and derive correct numerical solutions that can be measured in the real world
6. To instruct students in the competent use of laboratory equipment to collect and record data,apply relevant mathematical models and perform required computations, and present the derived results as an application of a measured observation of the physical world

**Prerequisites :** Nil

**Co-requisites :** Nil

**Curriculum:**

### Unit I Electrostatics

Coulombs law in vacuum expressed in vector form, Calculations of electric field E for simple distributions of charge at rest, dipole and quadrupole fields,Work done on a charge in an electrostatic field expressed as a line integral, Conservativenature of the electrostatics field. Relation between electric field and electric potential ( $E = -\nabla V$ ),Torque on a dipole in a uniform electric field and its energy, Flux of the electric field, Gauss` s law and its application for finding E for symmetric charge distributions, Dielectric, parallel plate capacitor with a dielectric, Dielectric constant, Polarization and Polarization vector P,Relation between displacement vector D, E and P, Molecular interpretation of Claussius-Mossotti equation.

## **Unit II Magnetostatics**

Force on moving charge, Lorentz force equation and definition of B, Force on straight conductor carrying current in uniform magnetic field, Torque on a current loop, Magnetic dipole moment, Angular momentum and gyromagnetic ratio, Biot and Savart's law, Calculation of H for simple geometrical situations such as solenoid, Anchor ring, Ampere's law,  $\nabla \times B = \mu_0 J$ ,  $\nabla \cdot B = 0$ , Field due to a magnetic dipole, Free and bound currents, Magnetization vector (M), Relationship between B, H and M.

## **Unit III Current Electricity**

Steady current, current density J, Non-steady currents and continuity equation. Kirchhoff's laws and its analysis, Growth and decay of current in LR and CR circuits, Decay constants, LCR circuits, AC circuits, Series and parallel resonance, Q-factor, Power consumed by an A.C. circuit, Power factor, Electricity observed in living systems.

## **Unit IV Motion of Charged Particles in Electric and Magnetic Fields**

E as an accelerating field, Electron gun, Discharge tube, Linear accelerator, E as deflecting field- CRO, Sensitivity of CRO, Mass Spectrograph and velocity selector, Curvatures of tracks for energy determination for nuclear particles, Principle and working of Cyclotron, Mutually perpendicular and parallel E & B fields: positive parabolas.

## **Unit V Electrodynamics**

Electromagnetic induction, Faraday's laws, Electromotive force, Integral and Differential form of Faraday's laws, Self and mutual inductance, Transformers, Energy in a static magnetic field, Maxwell's displacement current, Derivations of Maxwell's equations, Electromagnetic field energy density, Poynting vector, Electromagnetic wave equation, Plane electromagnetic waves in vacuum and dielectric media, Reflection at a plane boundary of dielectrics, Fresnel's Laws, Polarization by reflection and total internal reflection.

### **List of Practicals:**

1. Measurement of low resistance by Carey-foster bridge
2. Measurement of inductance using impedance at different frequencies
3. Measurement of capacitance using impedance at different frequencies
4. Response curve for LCR circuits and response frequencies
5. Sensitivity of a Cathode-ray oscilloscope
6. Use of vibration magnetometer to study a field
7. Study of magnetic field due to current using tangent galvanometer
8. Study of decay of currents in RC circuits
9. Study of decay of currents in LR circuits
10. Study of lissajous figures using CRO

**Project: On any one topic from the syllabus (compulsory).**

**Course Outcomes:**

- A. To understand basic laws of electrostatics and magnetostatics
- B. They must be able to understand the basic concept of electric current
- C. Analyze and apply the mathematical formula for problem solving techniques
- D. Understanding of core concept of electricity and magnetism physics which they can apply for further study

**Textbooks:**

1. *Schaums Outline of Beginning Physics II: Electricity and Magnetism*, A Halpern, EErlbach, McGraw Hill
2. *Berkley Physics Course Electricity and Magnetism*, E. M. Purcell, McGraw Hill

**References:**

1. *Physics Volume 2*, D. Halliday and R. Resnick. Wiley
2. *Introduction to Electrodynamics*, D.J Griffiths, Printiee Hall.
3. *Electricity and Magnetism*, Edward Mills Purcell, Cambridge University Press.
4. *Unified Physics IV Semester*, R. P. Goyal, Shival Agrawal and Company Publishers.
5. *Concepts of Physics I*, H.C. Varma, Bharati Bhavan Publishers
6. *Concepts of Physics II*, H.C. Varma, Bharati Bhavan Publishers

**Web Source:**

1. <https://www.mooc-list.com/tags/electromagnetismhttp://>
2. [freevideolectures.com/Course/3288/Electromagnetic-Theory](http://freevideolectures.com/Course/3288/Electromagnetic-Theory)
3. <https://www.edx.org/course/circuits-electronics-1-basic-circuit-mitx-6-002-1x-0>

**Open Learning Source:**

1. <https://www.edx.org/course/electricity-magnetism-part-1-ricex-phys102-1x-1>
2. [http://learningpath.org/articles/Free\\_Online\\_Electromagnetism\\_Courses\\_](http://learningpath.org/articles/Free_Online_Electromagnetism_Courses_)
3. [https://onlinecourses.nptel.ac.in/iitm\\_ec\\_1010/preview](https://onlinecourses.nptel.ac.in/iitm_ec_1010/preview)



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## Syllabus

Course Code	Course Name	Hours per Week			Total	Total
		L	T	P	Hrs.	Credits
BC3SE04	PHP Programming	2	0	4	6	4

### Course Objectives:

1. To provide basic knowledge of PHP syntax and learn about creating first PHP script.
2. To provide knowledge about the Conditional statement, Loops and uses of Array in PHP
3. To provide knowledge about the uses of Functions and Strings in PHP
4. To provide knowledge about how to send information to the Web Server by using GET and POST method and also aware about advanced OOPs Concept.
5. To enable the students to integrate MySQL with PHP and make database connectivity

**Prerequisites :** Basics of Programming

**Co-requisites :** Nil

### Curriculum:

#### Unit-I Introduction

Introducing PHP, Basic development Concepts – Creating first PHP Scripts, Variable and constants, Type of data in PHP, expressions, scopes of a variable (local, global). PHP Operators, Operator precedence and associativity.

#### Unit-II Control Statements and Arrays

Controlling Program Flow: If-Else conditional statement, Switch case, Loops.

Working with Arrays: Storing Data in Arrays, Processing Arrays with Loops and Iterations, Working with Array Functions, Working with Dates and Times.

#### Unit-III Functions and Strings

Function, need of function, declaration and calling a function, function with arguments, default argument function.

Creating and accessing string, searching and replacing string, formatting, joining and splitting string.



## **Unit-IV Form handling and Classes**

Form handling: Creating form, Capturing form data, GET and POST form methods, dealing with multivalued fields, redirecting a form after submission.

## **Unit-V Database Connectivity**

Working MySQL with PHP-database connectivity, processing result sets of queries, handling errors-debugging and diagnostic functions- validating user input through Database layer and Application layer, sample database applications.

### **List of Practicals:**

1. Write a PHP script to get the PHP version and configuration information.
2. Create a simple HTML form and accept the user name and display the name through PHP echo statement.
3. Write a program to display strings and variables with the echo command.
4. Write a program to display strings and variables with the print command.
5. Write a program to demonstrate data types.
6. Write a program to get the length of a string.
7. Write a program to count the number of words in a string.
8. Write a program to reverse a string.
9. Write a program to search for a specific text within a string.
10. Write a program to replace text within a string.
11. Write a program to perform arithmetic operations.
12. Write a program to find greater number among three number using logical operator.
13. Write a program to find greater number among three number using nested if.
14. Write a program to print the day name according to the number using switch.
15. Write a program to print the series from 1 to 100 using for loop.
16. Write a program to create array and initialize the array.
17. Write a program to display the string using function.
18. Write a program to sort the array.
19. Write a program to find the length of array.
20. Write a program to search an element in an array.
21. Write a program to create a html form and apply validation on it.
22. Write a program use readfile() to read a file and write it to the output buffer.
23. Write a program for session handling.
24. Write a program to connect your interface with MySQL
- 25. Develop a project to manage a particular system.**

### **Course Outcomes:**

- A. Students will be able to creating first PHP script.
- B. Students will be able to understand If-Else conditional statement, Loops and implement Array with Forms.
- C. Students will be able to create Function and handle String related library Function.

- D. Students will be able to perform Form Handling and also aware about OOPs concept
- E. Students will be able to implement PHP with MySQL and make database connectivity

**Text Books:**

1. *PHP: the complete reference*, Holzner, Steven, *Tata McGraw-Hill Education*.
2. *PHP and MYSQL*, Vikram Vanvanshi, *Tata McGraw-Hill*.
3. *Murach's PHP and MySQL*, Murach, Joel, and Ray Harris. *Mike Murach & Associates, Inc.*

**Reference Books:**

1. *Php and mysql for dynamic web sites: visual quickpro guide*, Ullman, Larry, *Peachpit Press*.
2. *Programming PHP*, Lerdorf, Rasmus, Kevin Tatroe, and Peter MacIntyre, *O'Reilly Media, Inc.*
3. *Beginning PHP, Apache, MySQL Web Development*, Glass, Michael K., et al., *John Wiley & Sons*.
4. *PHP and MySQL Web development*, Welling, Luke, and Laura Thomson, *Sams Publishing*.
5. *Head First PHP & MySQL*, Beighley, Lynn, and Michael Morrison., *O'Reilly Media, Inc.*

**Web References:**

1. <https://www.w3schools.com/php/default.asp>

**Open Learning Source:**

1. <https://www.codecademy.com/en/tracks/php>