



SOPHIA GIRLS' COLLEGE (AUTONOMOUS), AJMER

Session 2022-23

Criterion

I

Curricular Aspects

1.2.1 Percentage of new courses introduced of the total number of courses across all programs offered during the session 2022-23.

- *Syllabus of new courses introduced during the session 2022-23.*

SOPHIA GIRLS' COLLEGE, AJMER
(AUTONOMOUS)



Scheme of Examination

And

SYLLABUS

2019-20(Batch)

FOR

Integrated M.Sc. Computer Science

(IMSC)

Under

Choice Based Credit System

Semester – I to VIII

Integrated M.Sc. Computer Science(I.M.Sc.)

Eligibility for admission in First Year of IMSC is 10+2 examination of any board with at least 50% marks. As regards admission on reserved category seats government rules will be applicable.

SCHEME OF EXAMINATION

The number of the paper and the maximum marks for each paper together, with the minimum marks required to pass are shown against each subject separately. It will be necessary for a candidate to pass in the theory as well as the practical part of a subject/paper, wherever prescribed, separately.

Classification of successful candidates shall be as follows:

First Division	60%	}	of the aggregate marks prescribed in Semesters I to VI taken together
Second Division	50%		

All the rest shall be declared to have passed the examination.

- ▲ For passing a candidate shall have to secure at least 40% marks in each course (Theory and Practical separately).
- ▲ No division shall be awarded in Semesters I to V.
- ▲ Whenever a candidate appears for a due paper examination, she will do so according to the syllabus in force.
- ▲ A candidate not appearing in any examination/absent in any paper of term end examination shall be considered as having DUE in those papers.

Internal Examination Pattern

Maximum Marks: 30

Continuous Internal Assessment (CIA) - 20 Marks

Class Performance (CP) - 10 Marks

Continuous Internal Assessment (CIA) Pattern

CIA will be taken from Unit – I & II only.

Section A

Contains 8 Questions of 2 marks each from which 5 questions to do. $5 \times 2 = 10$ marks

Section B

Contains 2 questions with internal choice (Two questions from each unit). $2 \times 3 = 6$ marks

Each Question carries 3 marks.

Student has to do 2 questions and at least one question from each unit. $1 \times 4 = 4$ marks

Section C

Contains 1 questions with internal choice (One questions from each unit).

Question carries 4 marks.

Student has to do 1 question from the internal choice given.

Internal Practical Examination Pattern

1. A Laboratory Exercise File should be prepared by each student for each practical paper and should be submitted during practical examinations.
2. One internal examiner shall conduct two practical exams, in a day, of a batch of 60 students.
3. Duration of internal practical examination is 1 hours
4. Internal Practical of 15 marks distribution is as under:
 - a. 10 marks for Viva-voce / Practical examination exercise of 2 questions.
 - b. 5 marks for Laboratory Exercise File.

External Examination Pattern

Maximum Marks : 70

Duration : 2 ½ Hrs.

Section A

Contains 10 Questions of 1 mark each & all are compulsory to do. $10 \times 1 = 10$ marks

Three questions from each unit (but 4 questions from one unit)

$3 + 3 + 4 = 10$ Questions

Section B

Contains 3 questions with internal choice (Two questions from each unit) $3 \times 5 = 15$ marks

Each Question carries 5 marks.

Student has to do 3 questions and at least one question from each unit.

Section C

Contains 3 questions with internal choice (Two questions from each unit). $3 \times 15 = 45$ marks

Each Question carries 15 marks.

Student has to do 3 questions and at least one question from each unit.

External Practical Examination Pattern

1. A Laboratory Exercise File should be prepared by each student for each practical paper and should be submitted during practical examinations.
2. One internal and one external examiner shall conduct two practical exams, in a day, of a batch of 60 students.
3. Duration of external practical examination is 3 hours.
4. External Practical of 35 marks distribution is as under:
 - c. 15 marks for practical examination exercise for 3 questions.
 - d. 10 marks for Viva-voce
 - e. 10 marks for Laboratory Exercise File.

Course Structure in Semester-VII

Paper Code	Nomenclature of the Paper	Contact Hours		Credits	Total Marks		Max. Marks	Min. Marks	Exam. Duration
		Per Sem.	Per Week		Internal	External			
IMSC-701	Artificial Intelligence	45	03	04	30	70	100	40	2 ½ Hr.
IMSC-702	Cloud Computing	45	03	04	30	70	100	40	2 ½ Hr.
IMSC-703	Data Science Using R	45	03	04	30	70	100	40	2 ½ Hr.
IMSC-704	(a) Internet of Things	45	03	04	30	70	100	40	2 ½ Hr.
	(b) Image processing								
IMSC-705	Prac.: Artificial Intelligence	60	04	02	15	35	50	20	3 Hr.
IMSC-706	Prac.: Cloud Computing	60	04	02	15	35	50	20	3 Hr.
IMSC-707	Prac.: Data Science Using R	60	04	02	15	35	50	20	3 Hr.
IMSC-708	(a) Prac.: Internet of Things	60	04	02	15	35	50	20	3 Hr.
	(b) Prac.: Image Processing								
Semester Total							600	240	

IMSC-701 : ARTIFICIAL INTELLIGENCE

Max. Marks : 70

Min. Marks: 28

Credits: 04

Duration: 2½ hrs

Learning Outcome:

On successful completion of the course, the students will be able to

1. Understand basic principles and application of AI
2. Solve various problems by applying a suitable search method
3. Understand key concept of learning
4. Develop Skills to Plan an expert system for specific domain

Unit I

Definition of AI, Applications of AI, knowledge-based systems, representation of knowledge, organization and acquisition of knowledge.

State space, Production system and its components, problem characteristics, production system characteristic, Problems (8-Puzzle problem, Tower of Hanoi, Cannibals and Missionaries and Travelling Salesman Problem)

Search problems: DFS, BFS, Heuristics Search (Generate and test, Greedy or Best First search).

Unit II

Syntax, semantics of propositional logic, syntax and semantics of FOPL, conversion to clausal form. Inference rule, resolution principles.

Non-deductive inference methods, truth maintenance system, fuzzy logic, Bayesian probabilistic inference, associative networks, frame networks.

Unit III

Concept of learning: Inductive and deductive, rote learning, Components of Learning Model, Performance Measures, Types of Learning (Supervised, Unsupervised, Active & Reinforcement).

Concept of expert system, need for an expert system, Characteristics & features of an expert system, Components of an expert system, Stages in the development of an expert system, Application areas of Expert System.

Reference Books:

1. Introduction to AI & Expert System – Patterson - PHI
2. Artificial Intelligence - Elaine Rich & Kevin Knight – MGHill
3. Artificial Intelligence - Luger – Pearson

IMSC-702 : Cloud Computing

Max. Marks: 70

Min. Marks: 28

Credits: 04

Duration: 2½hrs

Learning Outcome:

On successful completion of the course, the students will be able to

1. Demonstrate various technologies related to IAAS.
2. Manage virtual infrastructure in distributed environment.
3. Employ PAAS platforms like Aneka and Comet Cloud.
4. Develop Skills to take appropriate measures for data security over cloud computing.

Unit – I

Introduction to Cloud Computing

Introduction, Layers and Types of Clouds, Desired Features of a Cloud, Cloud Infrastructure Management, Service Models: Infrastructure as a Service (IaaS), Platform as a Service Providers(PaaS), Software as a Service (SaaS), Data Security: Introduction, Cloud Computing and Data Security Risk, Digital Identity.

Unit – II

Infrastructure As A Service (IAAS)

Virtual Machines, Distributed Management of Virtual Infrastructures, Scheduling Techniques for Advance Reservation of Capacity, Cluster as a Service, Cloud Storage, Technologies for Data Security in Cloud Computing.

Unit – III

Platform As A Service (PAAS)

Technologies and Tools for Cloud Computing, Aneka Cloud Platform, Hybrid Cloud Implementation, Comet Cloud, Autonomic Behavior of Comet Cloud.

Software As A Service (SAAS)

Introduction of SAAS, Advantages & Disadvantages, Introduction of Microsoft office 365, Google Apps & CloudSim.

Reference Books:

1. Cloud Computing, A Practical Approach Paperback by Toby Velte, Anthony Velte, McGraw Hill Education.
2. Cloud Computing by Sandeep Bhowmik, Cambridge University Press.
3. Cloud Computing by Rao M.N., PHI Learning Pvt Ltd.

IMSC–703 : Data Science Using R

Max. Marks: 70

Min. Marks: 28

Credits: 04

Duration: 2½ hrs

Learning Outcome:

On successful completion of the course, the students will be able to

1. Understand the basics in R programming in terms of constructs, control statements and understand the use of R for Data analytics
2. Obtain, clean and transform data, analyze and interpret data using a responsible approach.
3. Use appropriate models of analysis, assess the quality of input and derive insight from results.

UNIT-I

Introduction- Basic elements of R, data input and output, objects, attributes, number, vectors. Creating matrices – Matrix operations – Applying Functions to Matrix Rows and Columns – Adding and deleting rows and columns – Vector/Matrix Distinction – Avoiding Dimension Reduction

Higher Dimensional arrays – lists – Creating lists – General list operations – Accessing list components and values – applying functions to lists.

Reading data from files, control statements, loops, functions, R scripts

UNIT –II

Data science overviews, data visualisation using graphics in R, Gplot 2, File format of graphics output.

Introduction to hypotheses, types of hypothesis.

Data sampling, confidence and significance level, hypothesis tests, parametric test, non-parametric test.

UNIT-III

Introduction to Regression Analysis, types of regression analysis, nonlinear regression, cross validation, principal component analysis, factor analysis, association rules, Apriori algorithm classification its types, logistics, support vector machine, k-nearest neighbour, Naïve Bayes classification, decision tree classification, random forest classification, evaluating classifier model, introduction clustering, clustering methods.

Reference Books:

1. The Art of R Programming: A Tour of Statistical Software Design, Norman Matloff -NoStarch Press.
2. R for Everyone: Advanced Analytics and Graphics, Jared P. Lander-Addison-Wesley Data, 2013
3. Beginning R – The Statistical Programming Language, Mark Gardener-Wiley, 2013
4. Introductory R: A Beginner's Guide to Data Visualisation, Statistical Analysis and Programming in R, Robert Knell-Amazon Digital South Asia Services Inc, 2013.

IMCS-704 (A) : Internet of Things

Max. Marks: 70

Min. Marks: 28

Credits: 04

Duration: 2½ hrs

Learning Outcome:

1. Compare and contrast the deployment of smart objects and the technologies to connect them to network.
2. Appraise the role of IoT protocols for efficient network communication.
3. Elaborate the need for Data Analytics and Security in IoT.
4. Illustrate different sensor technologies for sensing real world entities and identify the applications of IoT in the Industry.

UNIT-I

Introduction to IoT: Definition, and characteristics of IoT, Genesis of IoT, IoT and Digitization, Design of IOT: Physical design of IOT, Logical Design of IOT- Functional Blocks, communication models, communication APIs, IOT enabling Technologies- Wireless Sensor Networks, Cloud computing, big data analytics, embedded systems. IOT Levels and deployment templates.

IoT Hardware and Software: Sensor and actuator, Humidity sensors, Ultrasonic sensor, Temperature Sensor, Arduino, Raspberry Pi, LiteOS, RIOTOS, Contiki OS, Tiny OS.

Architecture and Reference Model: Introduction, Reference Model and architecture, Representational State Transfer (REST), architectural style, Uniform Resource Identifiers (URIs).

UNIT-II

IP as the IoT Network Layer, The Business Case for IP, the need for Optimization, Optimizing IP for IoT, Profiles and Compliances, Application Protocols for IoT, The Transport Layer, IoT Application Transport Methods

Da and Analytics for IoT, An Introduction to Data Analytics for IoT, Machine Learning, Big Data Analytics Tools and Technology, Edge Streaming Analytics, Network Analytics, Securing IoT, A Brief History of OT Security, Common Challenges in OT Security, How IT and OT Security Practices and Systems Vary, Formal Risk Analysis Structures: OCTAVE and FAIR, The Phased Application of Security in an Operational Environment

UNIT-III

IoT Physical Devices and Endpoints - Arduino UNO: Introduction to Arduino, Arduino UNO, Installing the Software, Fundamentals of Arduino Programming IoT Physical Devices and Endpoints - IoT Physical Devices and Endpoints - RaspberryPi: Introduction to RaspberryPi, About the RaspberryPi Board: Hardware Layout, Operating Systems on RaspberryPi, Configuring RaspberryPi,

Programming RaspberryPi with Python, Wireless Temperature Monitoring System Using Pi, DS18B20 Temperature Sensor, Connecting Raspberry Pi via SSH, Accessing Temperature from DS18B20 sensors, Remote access to RaspberryPi, Smart and Connected Cities, An IoT Strategy for Smarter Cities, Smart City IoT Architecture.

Reference Books:

1. "IoT Fundamentals: Networking Technologies, Protocols, and Use Cases for IOT" by . David Hanes, Gonzalo Salgueiro, Pearson Education.
2. "Internet of Things" by Srinivasa K G, CENGAGE Learning India.
3. "Internet of Things (A Hands-on-Approach)" by . Vijay Madiseti and ArshdeepBahga, VPT.

IMCS–704 (B) : Image Processing

Max. Marks: 70

Min. Marks: 28

Credits: 04

Duration: 2½ hrs

Learning Outcomes

1. Apply knowledge of mathematics for image understanding and analysis.
2. Design and analysis of techniques / processes for image understanding.
3. Design, realize and troubleshoot various algorithms for image processing case studies.
4. Develop Skills to select the appropriate hardware and software tools (Contemporary) for image analysis.

Unit I

Introduction and Digital Image Fundamentals Digital Image Fundamentals, Human visual system, Image as a 2D data, Image representation – Gray scale and Color images, image sampling and quantization

Image enhancement in Spatial domain: Basic gray level Transformations, Histogram Processing Techniques, Spatial Filtering, Low pass filtering, High pass filtering

Filtering in the Frequency Domain: Preliminary Concepts, Extension to functions of two variables, Image Smoothing, Image Sharpening, Homomorphic filtering

Unit II

Image Restoration and Reconstruction: Noise Models, Noise Reduction, Inverse Filtering, MMSE (Wiener) Filtering

Color Image Processing: Color Fundamentals, Color Models, Pseudo color image processing

Image Compression: Fundamentals of redundancies, Basic Compression Methods: Huffman coding, Arithmetic coding, LZW coding, JPEG Compression standard

Unit III

Morphological Image Processing: Erosion, dilation, opening, closing, Basic Morphological Algorithms: 04 08 hole filling, connected components, thinning, skeletons

Object Recognition and Case studies Object Recognition- patterns and pattern classes, recognition based on decision – theoretic methods, structural methods, case studies – image analysis Application of Image processing in process industries

Reference Books:

1. Gonzalez & Woods, —Digital Image Processing, 3rd ed., Pearson education, 2008
2. Jain Anil K., —Fundamentals Digital Image Processing, Prentice Hall India, 2010
4. Rangaraj M. Rangayyan, —Biomedical Image Analysis, CRC Press, 2005
5. Pratt W.K., —Digital Image Processing, 3rd ed., John Wiley & Sons, 2007
6. Digital Image Processing, 3rd Edition, by Rafael C Gonzalez and Richard E Woods. Publisher: Pearson Education

Course Structure in Semester-VIII

Paper Code	Nomenclature of the Paper	Contact Hours		Credits	Total Marks		Max. Marks	Min. Marks	Exam. Duration
		Per Sem.	Per Week		Internal	External			
IMSC-801	Industrial Training (Internship) - Project	180	12	16	120	280	400	160	-
IMSC-802	Project : Report Presentation	240	16	08	60	140	200	80	3 Hr.
Semester Total							600	240	

IMCS-801 : Industrial Training (Internship) – Project

Max. Marks : 400

Min. Marks: 160

Credits: 16

Learning Outcome:

On successful completion of the course, the students will be able to

1. Express technical and behavioral ideas and thoughts
2. Self learned new tools, algorithms and techniques that contribute to the software solution
3. Test and validate conformance of the developed prototype against the original requirements of the problem
 - **75 %** Attendance during the internship is compulsory.
 - Internship Duration 90 Days / (180 Hours)
 - The Project Report work shall be assessed by one internal and one external examiner only of a batch of 30 students in a day.
 - The project work should not be done in a group. Each student shall be allotted one project and 2 copies of the project report in the prescribed format should be submitted in the College.

SOPHIA GIRLS' COLLEGE (AUTONOMOUS)

AJMER



Scheme of Examination

And

SYLLABUS

2022-23 (Batch)

FOR

Bachelor of Science (Maths)

(Mathematics)

Under

Choice Based Credit System

Semester – I to VI

Scheme for Choice Based Credit System - B.Sc. Math

Mathematics

Sem.	CORE COURSE (DSCC) / (DSCP) Max. (120)	ELECTIVE COURSE		ABILITY ENHANCEMENT COURSE (AEC)		NON-CGPA CREDIT COURSES (NCCC)	
		Discipline Specific Elective (DSE) (24)	Generic Elective (GE) (2)	Ability Enhancement Compulsory Courses (AECC) (6)	Skill Enhancement Course (SEC) (4)	Life Skill Education (LSE) (2)	Extra-curricular & Extension Activities (EEA) Min. (2) Max. (4)
I	DSCC – I DSCC – II DSCC – III DSCC – IV DSCC – V DSCC – VI DSCC – VII DSCL – VIII	--	--	AECC – I General English (2)	--	<ul style="list-style-type: none"> • Basic Yoga • Self Defence • Basic Swimming Tech. • Aerobics • Gym Fitness • Games & Sports 	<ul style="list-style-type: none"> • NCC (2) • NSS (2) • Outreach Programme (2) • Research Activities (2) • Exchange Activities (2) • Entrepreneurship Programs (2) • Extra-Curricular Activities (2) • Certified Course Completion from MOOCs / Swayam / NPTEL etc. (2) • Internships (2)
II	DSCC – I DSCC – II DSCC – III DSCC – IV DSCC – V DSCC – VI DSCC – VII DSCL – VIII	--	--	AECC – II General Hindi (2)	--		
III	DSCC – I DSCC – II DSCC – III DSCC – IV DSCC – V DSCC – VI DSCC – VII DSCL – VIII	--	--	AECC – III EVS (2)	--		
IV	DSCC – I DSCC – II DSCC – III DSCC – IV DSCC – V DSCC – VI DSCC – VII DSCL – VIII	--	--	--	SEC – I <ul style="list-style-type: none"> • Basic SPSS • Personality Development • Alternative Medicine & Home Remedies • Soft Skills • Tally • Dyeing & Printing • Photography 	--	
V	DSCC – I DSCC – III DSCL – V DSCC – VI DSCL – VIII	DSE – II (A/B) DSE – IV (A/B) DSE – VII (A/B)	--	--	SEC – II <ul style="list-style-type: none"> • Communicative English • Functional Hindi • Management of Domestic Gadgets and Appliances • Quantitative Aptitude and Reasoning • Animation Designing • Business Communication Skills • Baking & Confectionery 	--	

VI	DSCC – I	DSE – II (A/B) DSE – IV (A/B) DSE – VII (A/B)	Generic Elective (GE)	--	--	--
	DSCC – III DSCL-V					
	DSCC – VI					
	DSCL – VIII					

OUTLINE OF CHOICE BASED CREDIT SYSTEM FOR UG PROGRAMMES

1. **Core Course:** A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course.

- *Discipline Specific Core Course (DSCC)*
- *Discipline Specific Core Project (DSCP)*
- *Discipline Specific Core Practical (DSCL)*

2. **Elective Course:** Generally a course which can be chosen from a pool of courses.

2.1 **Discipline Specific Elective (DSE) Course or Project:** Elective courses may be offered by the main discipline/subject of study is referred to as *Discipline Specific Elective*.

2.2 **Generic Elective (GE) Course:** An elective course chosen generally from an unrelated discipline/subject, with an intention to seek exposure is called a *Generic Elective*.

3. **Ability Enhancement Courses (AEC):** The Ability Enhancement (AE) Courses are based upon the content that leads to Knowledge enhancement. These are mandatory for all disciplines. *Skill Enhancement Courses (SEC)* courses are value-based and/or skill-based and are aimed at providing hands-on-training, competencies, skills, etc.

3.1 **Ability Enhancement Compulsory Courses (AECC): - (6 Credits)**

- AECC – I - (Semester –I) General English - 2 Credits
- AECC – II - (Semester –II) General Hindi - 2 Credits
- AECC – III - (Semester –III) Environmental Studies - 2 Credits
- AECC-IV - (Semester – I) Life and Philosophy of Mahatma Gandhi - 2 Credits

3.2 **Skill Enhancement Courses (SEC) (Semester –IV & V):** These courses may be chosen from a pool of courses designed to provide value-based and/or skill-based knowledge and is aimed at providing hands-on-training, competencies, skills, etc. It is a 2 credit course and the total duration will be 30 hours.

4. **Non-CGPA Credit Courses (NCCC):** These courses are co-curricular and extra-curricular activity based courses. It is mandatory that an UG student earns 4 credits through NCCC. It comprises of:

- **Life Skills Education (LSE) - 2 Credits** (Semester –I & II)
Students earn 2 credits through LSE during first and second semester.
(**Health & Well Being Courses** - Basic Yoga, Basic Swimming Techniques, Aerobics, Gym Fitness, Games & Sports)
- **Extra-curricular & Extension Activities (EEA) - 2 Credits (Maximum 4 credits)** (From Semester –I-V)
In addition, all students should take part in extension/extra-curricular activities (NCC, NSS, Outreach, Research Initiatives, Exchange Programs, Entrepreneurship Programs, specified extra-curricular activities, Internships, Certified Course Completion from MOOCs / Swayam / NPTEL etc.,) in order to earn two credits as part of Extra-curricular and Extension Credits.

BACHELOR OF SCIENCE

Eligibility for admission in First Year of B.Sc. Mathematics is 10+2 examination of any Board with at least 50% marks. With regard to admission on reserved category seats government rules will be applicable.

SCHEME OF EXAMINATION

The number of the paper and the maximum marks for each paper together, with the minimum marks required to pass are shown against each subject separately. It will be necessary for a candidate to pass in the theory as well as the practical part of a subject/paper, wherever prescribed, separately.

Classification of successful candidates shall be as follows:

First Division	60%	} of the aggregate marks prescribed in Semesters I to VI taken together
Second Division	50%	

All the rest shall be declared to have passed the examination.

- ▲ For passing a candidate shall have to secure at least 40% marks in each course (Theory and Practical separately).
- ▲ No division shall be awarded in Semesters I to V.
- ▲ Whenever a candidate appears for a due paper examination, she will do so according to the syllabus in force.
- ▲ A candidate not appearing in any examination/absent in any paper of term end examination shall be considered as having DUE in those papers.

Program Outcome

On successful completion of B.Sc. Maths, the students will be able to-

- Understand the concepts and fundamental principles of Physics, Mathematics and Chemistry.
- Be equipped with practical knowledge in the respective field.
- To develop scientific skill for future analysts.
- To acquire logical and creative skills.
- To inculcate research aptitude.
- Be eligible for different competitions exams like SSC, Bank PO, Civil Services, Defence Services etc.
- To enhance skills in animation, architecture, mining etc.

Program Specific Outcome

On successful completion of B.A. with Mathematics, the students will be able to-

- Find solutions to Mathematical problems by using reasoning and logical concepts.
- Formulate and solve new Mathematical problems.
- Understand the Applications of Applied and Pure Mathematics.
- Use Mathematical principles for the betterment of society.
- Motivate themselves towards innovation and research

End Semester Examination Pattern

Maximum Marks: 70

Duration: 2 ½ Hrs.

Section A

10 x 1 = 10 marks

Contains 10 Questions of 1 mark each and all are compulsory.

Three questions from each unit and one extra question from any one unit.

3 + 3 + 4 = 10 Questions

Section B

3 x 5 = 15 marks

Contains 3 questions with internal choice (Two questions from each unit).

Each Question carries 5 marks.

A student has to attempt 3 questions, choosing at least one question from each unit.

Section C

3 x 5 = 15 marks

Contains 3 questions with internal choice (Two questions from each unit).

Each Question carries 5 marks.

A student has to attempt 3 questions, choosing at least one question from each unit.

End Semester Practical Examination Pattern

Maximum Marks: 40

Duration: 4 Hrs

Note:—

1. A Laboratory Exercise File should be prepared by each student for each practical paper and should be submitted during practical examinations.
2. One internal and one external shall conduct two practical exams, in a day, of a batch of 60 students.
3. Duration of practical exam is 4 hours.
4. Practical of 40 marks distributed in as under:
 - a. 30 marks for practical examination exercises.
 - b. 5 marks for Viva-voce
 - c. 5 marks for Laboratory Exercise File.

MAT-503: Practical

Max. Marks: 50

Min Marks: 20

Credit: 02

Duration: 3 Hrs

1. The MATLAB Environment, MATLAB Basics - Variables, Numbers, Operators, Expressions, Input and output.
2. Vectors, Arrays - Matrices.
3. Built-in Functions and User defined Functions.
4. Files and File Management - Import/Export, Basic 2D, 3D plots, Graphic handling.
5. Use of MATLAB in Matrix Addition, multiplication, subtraction.
6. Symbolic Calculation-symbols, differentiation, integration, etc.
7. Conditional Statements, Loops.

Reference Books:

- Agam Kumar Tyagi, "MATLAB and Simulink for Engineers", Oxford.

MAT – 603 : Practical

Max. Marks: 50

Min. Marks: 20

Credit: 02

Duration: 3 Hrs

Application of MATLAB:

1. MATLAB Programs - Programming and Debugging.
2. Mathematical Computing with MATLAB-Algebraic equations.
3. Basic Symbolic Calculus and Differential equations.
4. Ordinary differential equations: A first order and first degree ODE.
5. Interpolation with equal Interval: Newton -Gregory forward and backward interpolation formula.
6. Numerical Integration: Trapezoidal method.
7. Numerical Integration: Simpson method (1/3 and 3/8).

Reference Books:

- Agam Kumar Tyagi, "MATLAB and Simulink for Engineers", Oxford.

**SOPHIA GIRLS' COLLEGE
(AUTONOMOUS), AJMER**



**SYLLABUS
2022-23**

**DEPARTMENT OF MATHEMATICS
(SKILL ENHANCEMENT COURSE)**

SOPHIA GIRLS' COLLEGE(AUTONOMOUS), Ajmer
SEM – V–2022-23
(SKILL ENHANCEMENT COURSE)

Quantitative Aptitude

Max. Marks: 50 (Ext: 35,Int: 15) Course Duration: - 30 hrs/sem (2hrs/week)
Credits: 2

Course Outcome:

1. To understand the fundamentals of Algebra.
2. To analyze and solve basic mathematical problems.
3. To enhance the problem solving skill in various competitive exams.

UNIT- I

- Number System
- Algebraic Expression and simplification
- Ratio and Proportion
- Percentage
- Average

UNIT-II

- Profit and Loss
- Simple Interest and Compound Interest
- Time and Work
- Probability

UNIT-III

- Surds, Indices and Logarithms
- Calendar Problem and Clock Problem
- Permutations and Combinations
- Trigonometry (Identities, Height and distance)

Reference Books:

1. Quantitative Aptitude by R.S. Aggarwal, S. Chand Publication.
2. Reasoning and Aptitude by Nem Singh, Made Easy Publication.

Teaching Pedagogy:- Lecture Method and Written Assignment.

Evaluation Pattern

1. CIA - 15 (5-Viva+10- Brain Storming/ Group Discussion/ Assignment/ Presentation)
2. ESE - 35 (Written test)

SOPHIA GIRLS' COLLEGE, AJMER (AUTONOMOUS)



SYLLABUS 2022-23

DEPARTMENT OF PHYSICS (SKILL ENHANCEMENT COURSE)

- **Logical Reasoning**

**SOPHIA GIRLS' COLLEGE, AJMER
(AUTONOMOUS)
SEM – VI– 2022-23
SKILL ENHANCEMENT COURSE**

Logical Reasoning

Max. Marks: 50 (Ext: 35,Int: 15)

Credits: 2

Course Duration: - 30 hrs/sem (2hrs/week)

Course Outcome:

- To help in determining the analytical and decision-making abilities of the students.
- To understand the presence of mind of the aspirants.
- To determine the overall calibre of the aspirant.

UNIT- I

- Alphanumeric/Alphabetic/Number Series
- Coding and Decoding
- Input and Output
- Syllogism
- Ranking

UNIT-II

- Statement and Assumption
- Direction Sense Test
- Data Interpretation (Graphs, Tables, Bar Diagrams, Pie – chart)
- Logical Venn Diagram.

UNIT-III

- Seating Arrangement
- Puzzles
- Data Sufficiency
- Dices

Reference Books:

- Shortcuts in Reasoning for Competitive Exams by Disha Experts, for all types of reasoning.
- Analytical Reasoning by MK Panday

Teaching Pedagogy:- Lecture Method and Written Assignment.

Evaluation Pattern

3. CIA - 15 (5-Viva+10- Brain Storming/ Group Discussion/ Assignment/ Presentation)
4. ESE - 35 (Written test)

SOPHIA GIRLS' COLLEGE
(AUTONOMOUS)
AJMER



Scheme of Examination
And

SYLLABUS

2022-23 (Batch)

FOR

MASTER OF ARTS
(PSYCHOLOGY)

Under

Choice Based Credit System

SEMESTER – I TO IV

Scheme for Choice Based Credit System (PG) – M.A. Psychology

SEM.	CORE COURSE (120)	ELECTIVE COURSE		ABILITY ENHANCEMENT COURSE(AEC) (2 CREDITS)	Non-CGPA Credit Courses
	CORECOURSE (DSCC)/(DSCP) (102 CREDITS)	DISCIPLINE SPECIFIC ELECTIVE(DSE) (18 CREDITS)	GENERIC ELECTIVE (GE) (2 CREDITS)		Extra-curricular & Extension Activities (EEA) (2 CREDITS)
I	DSCC – I DSCC – II DSCC – III DSCC – IV DSCL – V	--	--	-	<ul style="list-style-type: none"> • Outreach • Research Activities • Exchange Activities • Entrepreneurship Programs • Internship • Specified Extra-Curricular Activities • Certified Course Completion from MOOCs/ Swayam /NPTEL etc.
II	DSCC – I DSCC – II DSCC – III DSCC – IV DSCL – V	--	--	<ul style="list-style-type: none"> ➤ Advanced Communication Skill. ➤ Advanced Computer Application 	
III	DSCC – I DSCC – II DSCL – V	DSEC – III(A/B) DSEC – IV (A/B)	--	--	
IV	DSCC – I DSCC – II DSCL – V	DSEC – III (A/B) DSE P / DSE C – IV (A/B)	<ul style="list-style-type: none"> ➤ Human Rights ➤ Advanced Tax Management 	--	
					<p style="text-align: center;">Minimum Credit Required: 126 Additional Credit: 2</p>

OUTLINE OF CHOICE BASED CREDIT SYSTEM FOR PG PROGRAMME

Core Course: A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course:

Discipline Specific Core Course (DSCC)

Discipline Specific Core Project/ Dissertation (DSCP)

Discipline Specific Core Practical (DSCL)

Elective Course: Generally, a course which can be chosen from a pool of courses:

Discipline Specific Elective (DSE) Course or Project: Elective courses may be offered by the main discipline/subject of study is referred to as Discipline Specific Elective.

Generic Elective (GE) Course: An elective course chosen generally from an unrelated discipline/subject, with an intention to seek exposure is called a Generic Elective.

Ability Enhancement Courses (AEC): The Ability Enhancement (AE) Courses are based upon the content that leads to Knowledge enhancement. These are mandatory for all disciplines. AEC courses are value-based and/or skill-based and are aimed at providing hands-on-training, competencies, skills, etc. It is a 2 credit course and the total duration will be 30 hours

Non-CGPA Credit Courses (NCCC): These courses are co-curricular and extra-curricular activity based courses. It is mandatory that an UG student earns 2 credits through NCCC. It comprises of:

Extra-curricular & Extension Activities (EEA) - 2 Credits (Maximum 4 credits)

In addition, all students should take part in extension/extra-curricular activities (NCC, NSS, Outreach, Research Initiatives, Exchange Programs, Entrepreneurship Programs, specified extra-curricular activities, Internships, Certified Course Completion from MOOCs/ Swayam / NPTEL etc.) in order to earn two credits as part of Extra-curricular and Extension Credits.

M.A. Psychology

Eligibility for admission in M.A. Psychology is Graduation from any faculty with at least 48% marks. With regard to admission on reserved category seats government rules will be applicable.

SCHEME OF EXAMINATION

The number of the paper and the maximum marks for each paper together, with the minimum marks required to pass are shown against each subject separately. It will be necessary for a candidate to pass in the theory as well as the practical part of a subject/paper, wherever prescribed, separately.

Classification of successful candidates shall be as follows:

First Division	60%	} of the aggregate marks prescribed in Semesters I to IV taken together
Second Division	50%	

All the rest shall be declared to have passed the examination.

- ▲ For passing a candidate shall have to secure at least 40% marks in each course (Theory and Practical separately).
- ▲ No division shall be awarded in Semesters I to III.

- ▲ Whenever a candidate appears for a due paper examination, she will do so according to the syllabus in force.
- ▲ A candidate not appearing in any examination/absent in any paper of term end Semester shall be considered as having DUE in those papers.

Program Outcomes

On successful completion of the Program the student shall be able to :-

1. Understand and extend the knowledge base of Psychology to the world of practice with a view to promote healthy interface between academia and society.
2. Formulate formal student-led research project and dissertation work by constructing research culture and investigative aptitude.
3. Develop psychological knowledge, skills and competencies to avail a plethora of opportunities in the field of mental health professionals, counselors, human resource management, civil services, defence, community awareness centres, teaching, research, consultancy, etc.

Examination Pattern

Maximum Marks: 70

Duration:3 Hrs.

Section A

10 * 1 =10 marks

Contains 10 Questions of 1 mark each & all are compulsory to do.

Three questions from each unit (but 4 questions from one unit)

3 + 3 + 4 = 10 Questions

Section B

3 * 5 = 15 marks

Contains 3 questions with internal choice (Two questions from each unit).

Each Question carries 5 marks. All Questions are compulsory to do.

Section C

3 * 15 = 45 marks

Contains 3 questions with internal choice (Two questions from each unit).

Each Question carries 15 marks. All Questions are compulsory to do.

End Semester Practical Examination Pattern

Maximum Marks: 70

Duration: 5

Hrs.

Note:

1. A Laboratory Exercise File should be prepared by each student for practical paper and should be submitted during practical examination.
2. One internal and one external examiner shall conduct two practical exams, in a day.
3. Duration of practical exam is 5 hours.
4. Practical of 70 marks distribution is as under:

Course Structure in Semester-I

Paper Code	Nomenclature	Type	Contact Hour Per Week	Credits	Total Marks		Max. Marks	Min. Pass Marks	Duration
					CIA	ESE			
PSYM-101	Systems and Theories of Personality	Core	06	06	30	70	100	40	3 hrs
PSYM-102	Cognitive Psychology- I	Core	06	06	30	70	100	40	3 hrs
PSYM-103	Neuro-Psychology- I	Core	06	06	30	70	100	40	3 hrs
PSYM-104	Basic Research Methods and Statistics	Core	06	06	30	70	100	40	3 hrs
PSYM-105	Practicals	Practical	12	06	30	70	100	40	5 hrs

PSYM-101: Systems and Theories of Personality

Max Marks: 100
Credit: 06

Min. Marks: 40
Duration: 03 hrs

Learning Outcomes:

On successful completion of the course, the student will be able to:-

1. Summarize and interpret the psychodynamic theories of personality.
2. Discuss the significance of personality theories and constructs.
3. Analyze personality related processes that underlie individual differences in behavior.

UNIT-I

- **ThePsychoanalyticaltheory:** Sigmund Freud.
- **AnalyticalTheory** (PostFreudian): Carl Jung.
 - Individual Theory (PostFreudian): Alfred Adler.
 - Neo-Psychoanalytical Theory: Karen Horney.
 - Neo-Psychoanalytical Theory: Erich Fromm.
- **.InterpersonalTheory:** HarryS.Sullivan.

UNIT-II

- **Life-Span approach to Personality:** Erik Erickson.
- **Theory of Needs:** Henry Murray.
- **TraitApproachtoPersonality:** Gordon Allport.
 - Trait Approach to Personality:Raymond Cattell.(Factor Theory)
 - Trait Approach to Personality:Hans Eysenck.(Factor Theory)
 - Other Trait Theorists: Robert McCrae and Paul Costa (Five-FactorModel).
- **Temperament Theory:** Arnold Buss and Robert Plomin.
- **Humanistic Theory of Personality:** Abraham Maslow and Carl Rogers.

UNIT-III

- **Construct Theory of Personality:** George Kelly.
- **Behavioral Theory of Personality:** B.F.Skinner.
- **Social Learning Theory:** Albert Bandura.
- **Social Learning Theory:** Julian Rotter.
- **Limited domain Theories of Personality.**
 - Need Achievement Theory: McClelland.
 - SensationSeeking: Morvin Zuckerman.
 - TheoryofLearnedHelplessness: Martin E.P.Seligman.
- **Field Theory of Personality:** Kurt Lewin.

Reference Books

- Frager, R. & Fadiman, J. (2007). *Personality and personal growth*. (6th Ed). India: Pearson Prentice Hall.
- Hall, C.S., Lindzey, G., & Campbell, J.B. (2007). *Theories of Personality*. (4thEd). India: Wiley.
- Mischel, W.; Shoda, Y.; & Smith, R. E. (2004). *Introduction to personality*. John Wiley & Sons.
- Hall, C.S., Lindzey, G. & Campbell, J. B. (1998). *Theories of Personality*. (3rd Ed) New York: John Wiley & Sons.
- Pervin, L.A. (1996). *The science of personality*. NY: John Wiley & Co.
- Feshbach, S. & Weiner, B. (1991) (3rdEd). *Personality*. Toronto: Health & Co.

Pedagogy: Students should be acquainted with the different elements of Psychology, various philosophies and contributions made by various Scholars of different schools. They should be motivated to interact amongst themselves to explore more in Psychology.

PSYM-102: Cognitive Psychology- I

Max Marks: 100
40
Credit: 06
hrs

Min. Marks:
Duration: 03

Learning Outcomes:

On successful completion of the course, the student will be able to:

1. Understand the historical development of Cognitive Psychology.
2. Explain the organization of basic cognitive functions with respect to perception, emotion and cognition.
3. Discuss the relevance of higher cognitive processes for understanding human behavior.

UNIT – I

○ Introduction to Cognitive Psychology:

- Definition, History of Cognitive Psychology (Brief Introduction).
- Cognitive Neuroscience (Brief Introduction).

○ Approaches

- Information Processing, Ecological, Connectionist and Evolutionary

○ Attention

- Processing Capacity and Selective Attention
- Models of Selective Attention
- Automaticity and Effect of Practice
- Divided Attention- Dual- Task Performance, The Attention Hypothesis of Automatization

UNIT – II

○ Perceptual Processes

- Theoretical Approaches- Gestalt, Ecological, Physiological, Computational, Bottom-Up and Top-Down Processing
- Perceptual Learning, Culture and Perception
- Signal Detection Theory- Assumptions and Applications
- Subliminal Perception and related factors

○ **Emotion and Cognition**

- Dimensional approaches, manipulating and measuring emotion
- Emotional Learning
- Emotion and Declarative Memory
- Emotion, Attention & Perception

UNIT – III

○ **Memory and Forgetting**

○ **Sensory Memory**

- Iconic and Echoic Memory

○ **Short Term Memory**

- Capability and Coding, Retention duration and Forgetting, Retrieval of information
- Working Memory

○ **Long-Term Memory**

- Capacity and Coding, Retention duration and Forgetting, Retrieval of information.
- Sub Divisions- Semantic- Episodic memory, Implicit – Explicit memory, Declarative – Procedural memory

- **Reconstructive nature of memory-** Autobiographical memory, Flashbulb Memories, Eyewitness memory, The Recovered / False Memory Debate

Reference Books

- Galotti, K.M. (2014). *Cognitive Psychology In and Outside Laboratory*(5th Ed). Greater Noida: Sage Publications India
- Solso R.L., Maclin O.H. &Maclin M.K. (2014). *Cognitive Psychology* (8th Ed). Noida: Pearson India Education.
- Riegler G.B. &Riegler B.R. (2008). *Cognitive Psychology – Applying the Science of the Mind*. New Delhi: Pearson India Education.
- Hunt R. & Ellis H. (2007). *Fundamentals of Cognitive Psychology* (7thEd.) Delhi: Tata McGraw.
- Smith E.E. &Kosslyn S.M. (2007). *Cognitive Psychology – Mind and Brain*. New Delhi: Prentice Hall India.
- Sternberg, R.J. (1999). *Cognitive Psychology*(4th Ed). Fort Worth : Harcourt Brace College Publisher

Pedagogy: The nature, meaning and other basic elements regarding cognition, attention, perception, emotion and memory will be discussed in the class.

PSYM – 103: Neuro-Psychology- I

Max Marks: 100
Credit: 06

Min. Marks: 40
Duration: 03 hrs

Learning Outcomes:

On successful completion of the course, the student will be able to:

1. Understand the foundations of Neuro Psychology.
2. Explain the neuropsychological basis of attention and perception.
3. Discuss the neuropsychological basis of memory, sleeping and waking.

Unit - I

○ **Introduction to Neuropsychology**

- Definition, History of Neuropsychology (Brief Introduction)
- Methods/ Techniques
- Laterality

○ **Neuroanatomy**

- Structure and Functions - Neurons, CNS, PNS and Neurotransmitters

Unit - II

○ **Neuropsychology of Attention**

- Sub Cortical Structure Influencing Attention
- Cerebral Cortex and Attention;
- Disorders of Attention

Neuropsychology of Sensory and Perceptual Processes

- Sensory and Perceptual Processes - Visual, Auditory and Somatosensory
- Neuropsychology of Motor Skills
- Disorders of Sensory and Perceptual Processes

Unit - III

○ **Neuropsychology of Memory**

- **Neuropsychological Basis of LTM, STM and Working Memory**
- **Disorders of Memory**

○ **Neuropsychology of Sleeping and Waking**

- Psychological and Neurobiological aspects
- **Disorders of Sleep**

Reference Books:

- Kalat, J. (2022). *Biological Psychology* (13th Ed): India.Cengage Learning India Pvt Ltd
- Elias, L. & Saucier, D. (2018). *Neuropsychology:Clinical and Experimental Foundations*.Pearson Education Limited.
- Klein,S.B.&Thorne,M.B. (2006).*Biological Psychology*.New York:Worth Publishers.
- Solso,R.L. (2004). *Cognitive Psychology*(8th Ed). ND: Person Education.
- Zilmer, E.A.&Spears, M.V. (2001). *Principles of Neuropsychology*. Canada: Wadsworth.
- Sternberg, R.J. (1999). *Cognitive Psychology* (4th Ed).FortWorth:Hardcourt Brace College Publisher.
- Carlson, N. (2007). *Physiology of Behavior*(6th Ed). Boston: Allyn and Bacon.
- Best, J.B. (1995). *Cognitive Psychology*. MN: West Publishing Co.
- Walsh, K. (1994). *Neuropsychology: A Clinical Approach*. ND: Churchill Livingston.

Pedagogy: Classroom discussions may focus the structure, functions of nervous system with special reference to its effects on Behaviour.

PSYM-104: Basic Research Methods and Statistics

Max Marks: 100

Credits: 06

Learning Outcomes:

On successful completion of the Course the student will be able to:

- Understand the meaning, nature and other related concepts to research
- Enumerate various sources and techniques of data collection
- Inspect the application of qualitative and quantitative analysis in behavioural sciences

Min. Marks: 40

Duration: 03 hr

UNIT – I

○ Research

- Meaning, Objectives, Types and Formulation- Research Problem,Hypothesis and Variables

○ ResearchDesign

- Meaning, purpose, principles and important concepts related to research design.
- Research designs in case of Exploratory, Descriptive, Diagnostic and Hypothesis testing research designs.
- **Research Designs:** Between-group; Within-group design.

○ Sampling

- Probability, Non Probability and Complex random sampling designs.

UNIT – II

○ Sources of Primary and Secondary data

- Including Library and E-resources

○ Techniques of Quantitative and Qualitative Data Collection

- Interview, Schedule, Questionnaire, Observation & Oral history.

- Case Study & Content Analysis.
- **Qualitative Analysis (Conceptual Foundation)**
 - Phenomenological Analysis; Grounded Theory; Narrative Analysis; Conversation Analysis and Discourse Analysis.

UNIT – III

- **Analysis of Quantitative data (Conceptual Foundations)-**
 - Characteristics of Normal Probability Curve
 - Measures of Central tendency (Mean, Median, Mode)
 - Measures of Dispersion (Standard deviation, Quartile Deviation)
 - Correlational Analysis
 - Regression Analysis
 - Factorial Analysis
- **An Overview of Hypothesis Testing (Conceptual Foundations)-**
 - A detailed discussion of t, F, Z, Chi-square tests
- **Analysis of Qualitative data (Conceptual Foundations)-**
 - Successive Approximation and The Illustrative Method

Reference Books:

- Aron, A., Coups, E. & Aron, E. (2019). *Statistics for Psychology* (6th Ed). India: Pearson Publications.
- Kerlinger F.N. (2017). *Foundation of behavioral research* (3rd Ed). New Delhi: Surjeet Publications.
- Veeraraghavan, V and Shetgovekar, S. (2016). *Textbook of Parametric and Non Parametric Statistics*. SAGE India: Sage Publications Ind Pvt Ltd.
- Garrett H. E. (2022). *Statistics in Psychology and Education*. Vakils. Feffer & Simons Ltd.
- Kothari, C.R. (2008). *Research Methodology- Methods and Technique*. New Delhi: Wiley and Eastern Limited
- Babbie, E.R. (2005). *Survey Research Methods*. Belmont California: Wadsworth Publishing Company.
- Singh, A.K. (2002). *Tests, Measurements and Research Methods in Behavioral Sciences*. Patna: BB printers
- Sellitz, et al. (2003). *Research Methods in Social Relations*. New York.
- Black, T. (2001). *Understanding Social Sciences Research*. New Delhi: Sage Publication.
- Mangal, S.K. (2000) *Statistics in Psychology and Education*. McGraw Hill Publication
- Broota, K.D. (1992). *Experimental Design in Behavioral Research*. Willey Eastern Ltd.
- Rosenburg, K. (1990). *Statistics for Behavioural Sciences*. W.C. Brown Publishers.

Pedagogy Students will be encouraged to have discussion on published research articles to understand the nature, meaning, methodology, the various steps and process involved in research.

PSYM-105: PRACTICALS

Max Marks: 100
Credit: 6

Min. Marks: 40
Duration: 05 hr

Learning Outcomes:

On successful completion of the Course the student will be able to :-

- Conduct and administer psychological experiments and tests.
- Apply different research designs to plan research proposal
- Sensitize students to understand the concerns related to special population.

1. Personality – Self Report Inventory (any 1)
2. Personality – Projective Test (any 1)
3. Experiment – Forgetting Curve
4. Test of Adjustment
5. Test of Emotional Intelligence
6. Plan Research Study on any two of the following Research Designs :-
 - i. Exploratory Design
 - ii. Descriptive Design
 - iii. Diagnostic Design
 - iv. Hypothesis testing Design
7. Outreach Programme (Volunteer Services) for a duration of 7-10 days in any one of the following psychologically relevant settings: -
 - i. Schools
 - ii. N.G.O.
 - iii. Old Age Homes
 - iv. Inclusive institutions
 - v. Orphanages etc.

Pedagogy: The students will be acquainted by the process of psychological test administration and conductionof psychological experiments.

Written Test and Lab Work	50 Marks
Record Work	30 Marks
Viva	20 Marks

Course Structure in Semester –II

Paper Code	Nomenclature	Type	Contact Hours Per Sem	Credits	Total Marks		Max Marks	Min Marks	Duration
					CIA	ESE			
PSYM-201	Applied Social Psychology	Core	06	06	30	70	100	40	3 hrs
PSYM-202	Cognitive Psychology- II	Core	06	06	30	70	100	40	3 hrs
PSYM-203	Neuro-Psychology – II	Core	06	06	30	70	100	40	3 hrs
PSYM-204	Developmental Psychology	Core	06	06	30	70	100	40	3 hrs
PSYM-205	Practicals	Practical	12	06	30	70	100	40	5 hrs
AEC-201 (Ability Enhancement Course)	A. Advanced Communication Skills OR B. Advanced Computer Application		2	2	15	35	50	20	2 ½ hrs

PSYM-201: Applied Social Psychology

Max Marks: 100

Credit: 06

Min. Marks: 40

Duration: 03 hrs

Learning Outcomes:

On successful completion of the course, the students will be able to:

1. Examine the concept of social behavior and interpersonal approaches.
2. Explain the concept of communication and sensitization towards social issues
3. Assess the concerns raised by population problems and environmental issues.

UNIT I

○ **Social Behaviour and Social Relations:**

- **Prosocial Behaviour and aggression:** Nature and Bio-psycho-social causes with theoretical explanations. Promoting prosocial behaviour and controlling aggression.
- **Interpersonal Attraction:** nature, determinants and theoretical approaches.

UNIT II

○ **Self and Communication:**

- **The Self in a Social world:** self-concept, self-esteem, perceived self-control, self-serving bias and self presentation
- **Communication:** Types of communication, Barriers in communication

○ **Social Problems:**

- Gender Discrimination and Violence against Women
- Human Rights of children, women and disabled
- Mass media - Effect on social behaviour
- Casteism, Communalism, Terrorism - Causes and consequences

UNIT III

- **Problems of Population and Globalization:**
 - Causes and Consequences of population explosion in India, community awareness programmes for population control
 - Globalization and its psychosocial effects
 - Causes and consequences of unemployment
- **Environmental issues:**
 - Stress and health hazards in relation to crowding, density, territoriality, privacy and personal space
 - Causes and psychosocial consequences of urbanization, problems of urban development and intervention strategies
 - Environmental protection

Reference Books :

- Crisp, R.J. and Turner, R.N. (2017). *Essential Social Psychology*. (3rd Ed). Sage Publications India Pvt. Ltd.
- Ahuja, R. (2014). *Social Problems in India*. (3rd Ed). Rawat Publication.
- Bechtel, R. B. (1997). *Environment and Behaviour – An introduction*. Sage Publications.
- Baron, R. A., Byrne, D. and Branscombe, N.R. (2007). *Social Psychology*. (11thEd). Pearson. Practice Hall.
- Chadha, N. K. (2012). *Social Psychology*. New Delhi: Macmillan Publishes India Limited.
- Brickman, L & Rag, D.J. (1997). *Handbook of social research*, Sage.

PSYM-202: Cognitive Psychology- II

Max Marks: 100
Credits: 06

Min. Marks: 40
Duration: 03 hr

Learning Outcome

On successful completion of the course, the students will be able to:-

- Understand the basic concepts in the field of Psycholinguistics
- Inspect the concept of creativity and intelligence.
- Evaluate the theories and prespective of decision making and reasoning.

UNIT I

- **Language:**
 - Psycholinguistics- Nature versus nurture and Linguistic- relativity Hypothesis
 - Properties, Structure, Acquisition, Comprehension and Production

- Comprehension- Top-down, Bottom up, Model of Text Comprehension.
- Language, thought and bilingualism.

UNIT II

- **Creativity and Human Intelligence:**
 - Creative Process, Creativity and Functional Fixedness, Investment Theory, Adaptive Function of creativity, Judging creativity. Creativity and Intelligence.
 - Human Intelligence – Problem of definition, Cognitive theories – Information processing speed, General Knowledge and reasoning and Problem solving. Cognitive Neuroscience support. Artificial Intelligence.

UNIT III

- **Reasoning and decision making**
 - Types, Deductive, Inductive
 - Everyday Decision Making - Process, theories
 - Cognitive illusions in decision making
 - Cognition in cross cultural perspective

Reference Books

- Galotti, K.M. (2014). *Cognitive Psychology In and Outside Laboratory*(5th Ed). Greater Noida: Sage Publications India
- Solso R.L., Maclin O.H. and Maclin M.K. (2014). *Cognitive Psychology* (8th Ed). Noida: Pearson India Education.
- Riegler G.B. and Riegler B.R. (2008). *Cognitive Psychology – Applying the Science of the Mind*. New Delhi: Pearson India Education.
- Hunt R. and Ellis H. (2007). *Fundamentals of Cognitive Psychology* (7th Ed.) Delhi: Tata McGraw.
- Smith E.E. and Kosslyn S.M. (2007). *Cognitive Psychology – Mind and Brain*. New Delhi: Prentice Hall India.
- Sternberg, R.J. (1999). *Cognitive Psychology*(4th Ed). Fort Worth : Harcourt Brace College Publisher

PSYM-203: Neuro-Psychology- II

Max Marks: 100
Credits: 06

Min. Marks: 40
Duration: 03 hrs

Learning Outcome

On successful completion of the course, the students will be able to:-

- Understand components of language and neuropsychological correlates of emotion and motivation.
- Illustrate the effect of hormones on behavior, learning and memory

- Evaluate neural developmental disorder and theoretical approaches to rehabilitation.

UNIT I

- **Language:**
 - Language systems in the brain,
 - Hemispheric Specialization
 - Brain Mechanisms of Speech Comprehensions and Production
 - Disorders of language and auditory perception
- **Neuropsychological Correlates of Motivation and Emotion:**
 - Hypothalamus and Limbic System in Emotions
 - Stress, Emotionality and Endorphins
 - Role of sub- cortical and cortex in emotional states, Disorders of emotions
 - Motivation – Chemical senses of taste and smell, Hypothalamic factors in eating and mechanisms of drinking

UNIT II

- **Hormones and Behavior:**
 - Mechanism of Hormone Action
 - Main Endocrine Glands and Their Hormones
 - Effects of Hormones on Learning and Memory

Unit III

- **Neural development and Developmental Disorders**
- **Applications of Neuropsychology:**
 - **Neuropsychological Rehabilitation** - Theoretical approaches to cognitive rehabilitation, brain injury and psychological problems, issues and intervention, neuro-rehabilitation strategies for people with neuro-degenerative disorders, Psychopharmacology

Reference Books:

- Klein,S.B., &Thorne,M.B. (2006).*Biological Psychology*.New York:Worth Publishers.
- Solso,R.L. (2004). *Cognitive Psychology*(8th Ed). ND : Person Education.
- Zilmer, E.A., &Spears, M.V. (2001). *Principles of Neuropsychology*. Canada : Wadsworth.
- Sternberg, R.J. (1999). *Cognitive Psychology* (4th Ed). Fort Worth :Harcourt Brace College Publisher.
- Carlson, N. (1999). *Physiology of Behavior*. Boston :Allyn and Bacon.
- Best, J.B. (1995). *Cognitive Psychology*. MN : West Publishing Co.
- Walsh, K. (1994). *Neuropsychology : A Clinical Approach*. ND : Churchill Livingston.

PSYM-204: Developmental Psychology

Max Marks: 100
Credits: 06

Min. Marks: 40
Duration: 03 hrs

Learning Outcome

On successful completion of the course, the students will be able to:-

- Understand the basic concepts and contexts of human development.
- Evaluate the perspective of cognitive, behavioural and moral development
- Assess the aspects of emotional development and successful aging.

UNIT I

- **Introduction:**
 - Concept of Human Development
 - Nature-nurture debate in Human Development.
- **Context of Human Development - Family:**
 - Role of Family
 - Parental Socialization During Childhood and Adolescence
 - Social Class and Ethnic Variations in Child Rearing
 - Influence of Siblings and Sibling Relationships
 - Sibling Relationships over the Course of Childhood
 - Positive Contributions of Sibling Relationships
- **Context of Human Development - Social Milieu:**
 - Peers as Agents of Socialization
 - School as a Socialization Agent
 - The Effects of Television on Child Development
 - Child Development in the Digital Age

UNIT II

- **Cognitive Development:**
 - Nature and Approaches- Piaget, Vygotsky, Information-Processing Perspective. Introduction to Multistore model
 - Language: Structure of language and Theories of language development
- **Aggression, Altruism, and Moral Development:**
 - Development of Aggression
 - Development of Prosocial Self
 - Development of Affective, Cognitive, and Behavioral Components of Morality

UNIT III

- **Emotional Development, Temperament, and Attachment:**
 - Emotional Development: The Development of Emotional Expressions, Recognizing and Interpreting Emotions
 - Temperament and Development
 - Hereditary and Environmental Influences on Temperament
 - Stability of Temperament
 - Attachment and Development
 - Factors That Influence Attachment Security
- **Ageing:**
 - Physical, Cognitive and Psychological development in late adulthood
 - Problems of ageing
 - Successful ageing

Reference Books:

- Berk, L.E. (2017). *Child Development*(9th Ed), Boston :Allyn& Bacon.
- Shaffer. D.A.(2014). *Developmental Psychology: Childhood and Adolescence*, 9th, USA: Cengage Learning
- Santrock , J.W. (1999). *Lifespan Development*. New York : McGraw Hill.
- Barnes, P. (1995). *Personal, Social and Emotional Development*. Oxford : Blackwell.
- Berry, J.W., Dasen, D.R. and Saraswathi, T.S. (1997). *Handbook of Cross-cultural Psychology : Basic Processes and Human Development*. New York: Allyn and Bacon.
- Bickerton, D. (1996). *Language and Human Behavior*. Washington D.C.: Psychology Press.
- Mishra, G. (Ed. 1999). *Psychological Perspective on Stress and Health*. New Delhi: Concept.
- Pestonjee, D.M. (1999). *Stress and Coping: The Indian Experience*. New Delhi: Sage Publications.
- Schaeffer, R. (1996). *Social Development*. Oxford: Blackwell.
- Sinha, D. (1981). *Socialization of the Indian Child*. New Delhi: Concept.
- Taylor, I. (1976). *Introduction to Psycholinguistics*. New York: Holt.
- Thompson, R.A. (Ed.) (1990). *Socio Emotional Development: Nebraska Symposium on Motivation, 1988*. Lincoln: University of Nebraska Press.

PSYM-205: Practical

Max Marks: 100
Credits: 06

Min. Marks: 40
Duration: 05 hrs

Learning Outcomes:

On successful completion of the Course the student will be able to :-

- Conduct, administer and interpret psychological experiments.
- Conduct, administer and interpret psychological tests.
- Analyze a published research article /paper/study.

1. Test of Aggression
2. Test of Prosocial Behaviour
3. Stress Assessment (Stressors/ Coping styles)
4. Test of Creativity
5. Test of Intelligence Measurement
6. Test of Attachment styles/Emotional maturity
7. Analysis of a published Research Paper/ Article from UGC CARE listed Journals.

Written Test and Lab Work	50 Marks
Record Work	30 Marks
Viva	20 Marks


Dr. Sr. Pearl
PRINCIPAL
SOPHIA GIRLS' COLLEGE
(AUTONOMOUS)
AJMER