

CALICUT UNIVERSITY

SECOND SEMESTER

FOUR-YEAR UNDER GRADUATE PROGRAMME (CU-FYUGP)

equipping with excellence

INVITATION TO PSYCHOLOGY
2024 ADMISSION

PREPARED BY

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**CALICUT UNIVERSITY – FOUR-YEAR UNDERGRADUATE
PROGRAMME (CU-FYUGP)**

BSc PSYCHOLOGY

SEMESTER 1

Programme	B. Sc. Psychology				
Course Title	Invitation to Psychology				
Type of Course	Major With Practical				
Semester	I				
Academic Level	100-199				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours
	4	3	-	2	75
Pre-requisites	Nil				
Course Summary	This foundational Psychology course offers students a thorough comprehension of Psychology as a scientific discipline, encompassing its historical evolution, diverse perspectives, and various branches. Through an examination of human cognitive processes like attention, perception, and consciousness, the course seeks to foster a heightened insight into the intricate workings of the human mind.				

Course Outcomes (CO):

CO	CO Statement	Cognitive Level*	Knowledge Category#	Evaluation Tools used
CO1	Explain different perspectives of psychology	U	C	Instructor-created exams / Quiz
CO2	Develops foundational knowledge and the practical application of psychological concepts	U	C	Writing reflective journals
CO3	Distinguish different methods used for studying human behaviour	An	C	Design and conduct interviews or surveys/ Practical Assignment / Observation of Practical Skills

CO4	Apply psychological principles to real-world scenarios, demonstrating the practical relevance of the discipline.	Ap	C	Discussion / Practical Assignments
CO5	Explore foundational psychological principles and theoretical frameworks underlying the concepts of attention, perception, and consciousness.	U	C	Instructor-created exams / Quiz/ Seminars/ Instructor-created exams / Quiz
CO6	Appreciate the value of Psychology and embrace a lifelong learning attitude towards psychological inquiry and discovery	Ap	C	Discussion
* - Remember (R), Understand (U), Apply (Ap), Analyse (An), Evaluate (E), Create (C)				
# - Factual Knowledge(F) Conceptual Knowledge (C) Procedural Knowledge (P) Metacognitive Knowledge (M)				

Detailed Syllabus:

Module	Unit	Content	Hrs (45 +30)	Marks (70)
I	Evolution of Psychology			10 15
	1	What is Psychology?	1	
	2	The Evolution of Psychology- Philosophical origin-Psychology's Early History- Psychology's Modern History- Psychology Today	3	
	3	Theoretical Approaches to Psychology: Structuralism, Functionalism, Behaviourism, Psychodynamic Approach, Humanistic Approach, Gestalt Psychology, Cognitive Perspectives, Biological Perspective, Evolutionary Perspective, Socio-Cultural Perspective.	3	
	4	Branches of Psychology, Scope of Psychology.	2	
	5	Evolution of Psychology in India-Colonial and post independent period	1	
II	Scientific methods to study human behaviour			10 15
	6	Psychology as a Science,	1	
	7	Goals of Psychology, Scientific temper and Scientific attitudes	3	
	8	Methods of Psychological research: Observation-Participant and Non-Participant Observation, Naturalistic Observation; Interview Methods- Structured, Semi Structured and Unstructured Interviews. Surveys; Case study; Questionnaires; Correlational studies; Experimental Method.	6	
III	Attention and Perception			15 25
	9	Attention: Types of Attention, Functions of Attention-Factors affecting Attention.	2	

	10	Phenomena associated with Attention: Span of Attention-Division of Attention-Distraction of Attention - Set in Attention.	2	
	11	Selective and Sustained Attention-Theories of Selective Attention	1	
	12	Sensation and Perception; Sensory threshold: Absolute threshold; Difference threshold; Just Noticeable Differences	2	
	13	Perceiving forms, patterns and objects: Perceptual Set, Feature analysis, Bottom-up Processing, Top- Down Processing.	2	
	14	Depth Perception	2	
	15	Perceptual Organization: Gestalt principles, Figure and Ground Segregation, phi-phenomenon.	1	
	16	Perceptual Constancies: Size, Shape, Brightness and Location Constancy	1	
	17	Visual Illusions and Types of Illusion	2	
IV	Consciousness			10
	18	Nature of consciousness; Biological rhythms-Circadian rhythms.	1	
	19	Sleep and waking cycle-Stages of sleep; Functions of sleep; Functions of REM sleep	3	
	20	Dreams	1	
	21	Altered states of consciousness: Hypnosis; Meditation.	2	
	22	Altering consciousness with drugs	3	
V	Experiments, and Practical Applications			30
	1	<p>Carry-out any four experiments of the following:</p> <p>1. Span of Attention: Conduct an experiment to determine the span of attention of the subject</p> <p>2. Distraction of Attention: Conduct an experiment to demonstrate the effect of distraction of attention on the performance of the subject.</p> <p>3. Division of Attention: Conduct an experiment to demonstrate division of attention in simultaneous performance of two tasks.</p> <p>4. Set in Attention: Conduct an experiment to demonstrate the effect of mental set</p> <p>5. Illusion: Determine the extent of Muller-Lyer illusion</p> <p>6. Illusion: Determine the extent of Horizontal Vertical Illusion</p> <p>7. Depth perception: Dijkstra's Algorithm (non-negative edge weights) and Bellman-Ford Algorithm (negative edge weights)</p> <p>8. Meditation: Examine the physiological and psychological effects of different meditation practices. Measure variables such as heart rate, blood pressure, and or subjective experiences before, during, and after meditation sessions to understand the impact on consciousness.</p>	20	

MODULE 1:

EVOLUTION OF PSYCHOLOGY

- 16th century- Term psychology - Derived from Greek words Psyche (soul) and logos (study) - psyche was used to refer to the soul, spirit, or mind, as distinguished from the body.
- Rudolf Goeckel: First used the term psychology (1590)
- "Psychology is the study of behaviour and mental process"
- "The science of mental life, both of its phenomena and their conditions"- William James

EVOLUTION OF PSYCHOLOGY

Greek Philosophical Origin

Hippocrates (460- 377 BC)

- Greek physician
- Father of Modern Medicine
- Stressed upon the significance of brain in psychological process.
- Put forward the humoral theory – Blood, Phlegm, Yellow bile and Black bile.
- Disease is caused by imbalance of humor in the body, not by super powers. The corresponding four humors for personality are:
 - a. Melancholic
 - b. Choleric
 - c. Phlegmatic
 - d. Sanguine

Socrates (469- 399 BC)

- According to Socrates soul was not any faculty, nor was it any special kind of substance, but rather the capacity for intelligence and character.

Plato (427- 347 BC)

- Mind is separate from body and continuous to exist even after death.
- Ideas/ knowledge are innate

Aristotle (384- 322 BC)

- Student of Plato; Teacher of Alexander the great
- First examined topics like memory, sensation, sleep, dream, geriatrics etc.
- Rationalist empiricist i.e., mind analyses information from senses to produce knowledge.
- Explained psychological event in terms of biology – First physiological psychology.
- Soul is not different from body.
- Knowledge is acquired through learning and experiences – First theory of learning, Succession of ideas.

Rene Descartes (1596-1650 AD)

- Father of modern philosophy
- French philosopher
- Dualism – It is the mind, body interaction. They are separate entities which interact through pineal gland.
- Monism – it is the opposite of dualism. Mind and body should coexist.
- Two types:
 - Phenomenological – only mind exist, body is perception
 - Only body exist- mind is inside body
- Book- On Man
-

John Locke (1632-1704 AD)

- Dualist; Empiricist
- Opposed innate ideas – knowledge comes from experiences.
- Ideas are simple mental images, produced by sensation or reaction.
- Mind operates to arrange images, it does not create or destroy them.
- Concept of Tabula Rasa- the idea that at birth the mind is like a “blank tablet” and that all knowledge is subsequently derived from sensory experience. Locke’s actual phrase was “white paper.”
- Book- "An essay concerning human understanding"

THEORETICAL APPROACHES TO PSYCHOLOGY

Structuralism:

- Founder - Wilhelm Wundt
- Wundt focused on the structure of the mind and identification of the basic elements of consciousness and investigate how these
- elements are related (sensations, feelings, and images) using trained introspection (the careful, systematic self-observation of
- one's own conscious experience) and coined the term voluntarism (Wundt's term of structuralism)

Functionalism:

- Developed by William James.
- Functionalism was based on the belief that psychology should investigate the function or purpose of consciousness, rather than its structure.
- Concentrates on what mind does; the function of mental activity.
- Became prominent in 1900's.
- Focused upon the way human adapt to their environment: what roles behaviour played in allowing people to better adapt to their environment (Stream of consciousness) and was thus influenced by Darwins theory of natural selection (origin of species - 1859).
- 1890: "Principles of Psychology" - James's landmark book.

Behaviorism

- Second force in psychology.
- Developed by John. B. Watson. (little albert experiment-1912); redefined psychology as the science of behavior.
- A new school of thought that gradually became dominant within psychology between 1913 and the late 1920s.
- Behaviourism is a theoretical orientation based on the premise that scientific psychology should study only observable behavior.
- Rejected the early emphasis on the inner working of mind.
- Believed that it is unscientific to study consciousness.

Psychodynamic Perspective:

- Founded by Sigmund Freud (1856–1939), an Austrian physician in
- 1900s— Viennese neurologist by profession.
- 1900 – Book: The Interpretation of Dreams
- Give importance to the inner unconscious experiences (thoughts, memories and desires) and the forces that led that behavior.
-

- By 1920 psychoanalytic theory was widely known around the world.
- Psychoanalysis: It is a set of theories and therapeutic techniques used to study the unconscious mind, which together form a method of treatment for mental disorders.

Humanistic Perspective

- Humanism (at the beginning of 1950s) is a theoretical orientation that emphasizes the unique qualities of humans, especially their freedom and their potential for personal growth.
- Third force of psychology.
- Friderich Niethammer coined the term.
- Suggest that people is in control of their life- held the concept of free will.
- Rejected the behaviorist's view and psychodynamic view.
- Stresses the idea that people by nature have a tendency to move towards higher level of maturity and maximum potential.

Gestalt Psychology

- Gestalt – Form, configuration, whole, organization etc.
- Developed by Kurt Koffka, Max Wertheimer & Wolfgang Kohler.
- Organization of perception and thinking as a whole rather than individual element.
- Developed as a reaction to structuralism.
- Main concept - "whole is different from sum of its parts".

Cognitive Psychology

- Ulric Neisser- Founder of cognitive psychology
- Ulric Neisser: Put the name Cognitive psychology in to common use through his book 'Cognitive Psychology'. He is also known for the work on memory (Iconic and Echoic)
- Developed from the concept of consciousness in structuralism.
- Focuses on how people know, understand, and think about the world.
- Cognition refers to mental processes involved in acquiring knowledge. Only by studying mental processes can we fully understand what organisms do.

BRANCHES OF PSYCHOLOGY

- **Clinical Psychology** : A branch concerned with the study, diagnosis, and treatment of abnormal behavior.
- **Industrial/Organizational psychology** :Studies the psychology in action at the workplace, including productivity, job satisfaction, and decision making.
- **Health psychology**: The branch of psychology that explore the relationship of psychological factors and physical ailment or disease.
- **Consumer psychology** : A branch of psychology that studies and explains our buying habits and our effects of advertising a buying behavior, mainly deal with the likes and dislikes and preferences.
- **Sport Psychology**: The branch of psychology, that studies the psychological variables that have an impact upon the sportspersons' performance; e.g. how stress can affect sport performance, how morale can be boosted, the role of selfconcept and esteem, the impact of crowd behavior etc.
- **Forensic Psychology**:The branch of psychology that investigates legal issues and psychological variables involved in criminal behavior ; e.g. what factors determine Criminal tendencies, how criminals be reformed, deciding what criteria indicate that a person is legally insane, and whether larger and smaller juries make fairer decisions.
- **General psychology**: This branch deals with the fundamental rules, principles and theories of Psychology in relation to the study of behaviour of normal adult human beings. It explains various psychological processes like sensations, perceptions, emotions, learning, intelligence, personality, etc.
- **Physiological psychology**: This branch describes the biological basis of behaviour. There is a close relationship between body and mind; the functions of each other are mutually influenced. The functioning of the brain, nervous system, endocrine glands and their relation to cognitive, Conative and affective behaviour is explained in this branch of psychology.
- **Developmental psychology**: Human life passes through various stages of development from Conception to old age. This branch explains the growth and development of various processes in relation to behaviour.
- **Child psychology**
Childhood extends from 2 to 12 years. This is a crucial period in the life. Future life depends upon development during childhood. Growth and Development will be rapid during this stage. Child psychology deals with These aspects.
- **Social psychology**
Human being is a social animal. Naturally the behavior of an individual Is influenced by society and in turn influences the society. Social psychology deals with interrelationships of people among themselves, likes and dislikes of people, attitudes and interests, the prejudices and social distances people have, group behaviour, group cohesiveness,

group conflicts, etc.

- **Educational psychology**

This is the most important field where psychological principles are applied. In the field of education 'learner' is the focal point. Other aspects like management, teachers, teaching and learning aids are all meant for learners. Learners differ in their abilities, hence they need different approaches of teaching, learning material, etc. This branch addresses to the problems and improvement in teaching and learning processes.

- **Counselling psychology** :Mental disorders may not be completely and easily cured just by drugs and other physical therapies. In addition to other therapies, these patients need counselling also. Counselling is a process in which an interaction takes place between a trained counsellor and a client. This branch also helps people to overcome adjustment problems.

- **Cross cultural psychology**

Cross-cultural psychology is the study of similarities and differences in behavior among individuals who have developed in different cultures.

The evolution of psychology in India reflects broader socio-political and cultural shifts, from colonialism to independence and now, a globalized world, making psychology an integral part of India's academic and practical landscape.

- Colonial Period: Western influences dominated, and psychology was largely imported from the West, with little consideration of India's unique social, cultural, and historical context.
- Post-Independence Period: After independence, there was a concerted effort to develop indigenous psychological frameworks while also engaging with Western research. This period marked the development of applied psychology and the establishment of important institutions and professional bodies in the field.
- Modern Period: Psychology in India today is a blend of Western scientific practices and indigenous methods, with growing interest in mental health, cultural psychology, and spiritual well-being.

MODULE 2

SCIENTIFIC METHODS TO STUDY HUMAN BEHAVIOUR

GOALS OF PSYCHOLOGY

1. Observation
2. Description
3. Understanding
4. Explanation
5. Prediction
6. Control of human behavior and mental process.

METHODS OF PSYCHOLOGY

1) Observational method : Observation is the systematic viewing of people's actions and recording, analysing and recording their behaviour, selectively. It involves the direct observation of the phenomena in its natural settings.

Types of observational method

1. Controlled & Uncontrolled / Naturalistic

- In naturalistic observation a researcher engages in careful observation of behavior without intervening directly with the subjects. Are done in a natural or real life setting.
- Controlled observations are done in experimental set-up, in a systematic way.

2. Structured/ Systematic & Unstructured

- Systematic observation have a structure format ie., done with a proper plan. Checklist is prepared on the basis of the subject and complete awareness of the subject is present.
- Unstructured observation is similar to naturalistic observation in which no plan or structure is prepared for the observation.

3. Participant & Non-participant

- The participant observation means watching the events or situation or activities from inside by taking part in the group to be observed.

4. Aided & Unaided

- Direct observation without any instrument is called unaided observation.
- Observation by using instruments is called aided observation.

2 Interview method

- It is a face to face conversation or verbal exchange between at least 2 individuals who are known as the interviewee (respondents) and interviewer.

Types

- Structured interview: The interview is designed and detailed in advance. A structured interview is pre-planned, accurate, and consistent.
- Semi-structured interview: A semi-structured manner in which certain keywords are used for questioning and the questions are completely prepared.
- Unstructured interview: An unplanned one, where the interview questionnaire is not prepared. Here, the effectiveness of the interview is very less and there is a tremendous waste of time and effort of both the interviewer and the interviewee.

Case study/ clinical method

- Observational data collection technique in which one individual is studied in-depth in order to identify behavioural, emotional, cognitive and other aspects of the individual. When this method is applied to victims of suicide the case studies are called psychological autopsies.

Survey method:

- In a survey researchers use questionnaires or interviews to gather information about specific aspects of participants' background and behavior. Surveys are often used to obtain information on aspects of behavior that are difficult to observe directly. Surveys also make it relatively easy to collect data on attitudes and opinions from large samples of participants. The major problem with surveys is that they depend on self-report data.

5) Questionnaire

- A Questionnaire is a structured form, either written or printed, consists of a formalized set of questions designed to collect information on some subject or subjects from one or more respondents.

Types:

- Closed ended questionnaire: Consist of questions which have multiple options as answers and allow respondents to select a single option from amongst them.
- Open ended questionnaire: Consist of questions that allow the target audience to voice their feelings and notions freely.

6) Correlational Research

- Correlational methods look at the relationship or association between two variables (IV & DV) without

establishing cause and effect relationships. The goal is to determine to what extent one variable predicts the other.

- The measure of correlation called the correlation coefficient, summarize in one figure the direction and degree of correlation. It ranges from +1 to -1.

Types of Types of correlation

- Positive correlation: Increase in IV lead to increase in DV. Both variables directly proportional to each other.
- Negative correlation: Increase in IV leads to decrease in DV.
- Zero correlation: No relation between IV and DV

7) Experimental method

- The experiment is a relatively powerful procedure that allows researchers to detect cause-and-effect relationships.
- Experimental research involves the manipulation of an independent variable to determine its effect on a dependent variable.
 - a. The experimental group consists of the subjects who receive some special treatment in regard to the independent variable.
 - b. The control group consists of similar subjects who do not receive the special treatment given to the experimental group.

Types of experiments

I. Laboratory/ controlled experiment

- Conducted in a well-controlled environment -not necessarily a laboratory- and therefore accurate measurements are possible.

2. Field experiment

- Are done in real life environment of the participants. The experimenter still manipulates the IV, but in a real life setting.

3 Natural experiment

- Conducted in the real life environment of the participants.
- Experimenter has no control over the IV, as it occurs naturally in real life.

MODULE 3

ATTENTION AND PERCEPTION

Attention is a complex cognitive process that involves focusing mental resources on specific information while ignoring others.

Types of Attention:

- Sustained Attention (Vigilance): The ability to focus on a task or stimulus over a long period of time without becoming distracted.
- Selective Attention: The ability to focus on a specific task or stimulus while ignoring irrelevant or distracting information.
- Divided Attention: The ability to focus on more than one task at the same time, also known as multitasking.
- Alternating Attention: The ability to switch focus between tasks that require different cognitive demands.
- Focused Attention: The ability to concentrate on one specific stimulus or task, excluding everything else.

Functions of Attention:

- Focus: Helps in concentrating on relevant information and filtering out irrelevant stimuli.
- Perception: Attention directs sensory processing and helps us to perceive the environment more effectively.
- Memory: Attention plays a crucial role in encoding information into memory, making it easier to retrieve later.
- Cognitive Control: Attention helps in regulating cognitive resources, which are necessary for tasks like problem-solving, decision-making, and learning.
- Performance: The more focused your attention, the better your performance on tasks requiring mental effort.

Factors Affecting Attention:

- External Stimuli: Bright lights, loud sounds, or distractions in the environment can impact how well we focus.
- Mental State: Fatigue, stress, or emotional arousal can reduce attention and focus.
- Interest & Motivation: When we are interested or motivated, we can maintain attention more easily.
- Fatigue: Lack of rest can reduce cognitive resources, leading to poor attention.
- Task Complexity: The more complex a task, the harder it can be to maintain attention.
- Age: As we age, changes in brain function and cognitive abilities can affect attention span.

- Psychological Factors: Anxiety, depression, or other mental health issues can also negatively affect attention.
- Practice: Experience and practice with a task can improve attention and the ability to focus on it.

PHENOMENA ASSOCIATED WITH ATTENTION

1- Span of Attention:

- The span of attention refers to the amount of information that can be actively held and processed in conscious awareness at any given time. A well-known test for span of attention is the digit span task, where participants are asked to recall a series of numbers.
- The average span for most people is 7 items, known as Miller's law.

2- Division of Attention:

- The division of attention refers to the ability to split attention between multiple tasks or sources of information at once.
- This is also known as multitasking.
- In most cases, dividing attention can reduce performance in both tasks because our cognitive resources are limited

3- Distraction of Attention:

- The distraction of attention happens when irrelevant or competing stimuli divert focus away from the primary task or object of attention.
- Distractions can be external (e.g., noises, people talking) or internal (e.g., intrusive thoughts or worries).

4- Set in Attention:

- Set in attention refers to the mental framework or mental readiness to focus on a particular set of stimuli or tasks.
- It can be thought of as a kind of "cognitive bias" that helps filter relevant information.
- This phenomenon can be shaped by expectations, previous experiences, or goals.

THEORIES OF SELECTIVE ATTENTION

Selective attention refers to the process of focusing on a particular object, task, or piece of information while ignoring other irrelevant or distracting stimuli. Several theories aim to explain how we select what to focus on and how we filter out distractions:

- Broadbent's Filter Theory (1958): Broadbent proposed that selective attention works like a "bottleneck" or filter, where incoming sensory information is filtered at an early stage of processing. Information that is deemed relevant or important passes through the filter to be processed further, while irrelevant information is discarded.
- Treisman's Attenuation Theory (1964): Treisman modified Broadbent's model by suggesting that instead of a strict "filter," unattended stimuli are attenuated or weakened rather than completely blocked.
- Deutsch and Deutsch's Late Selection Theory (1963): This theory argues that all incoming information is processed at a deep, semantic level, and the selection of what to attend to happens late in the process, based on relevance or importance.

Theories of Sustained Attention: Sustained attention involves maintaining focus on a task or stimulus over a prolonged period of time without becoming distracted. Several theories explain how we maintain attention over time:

- Vigilance Theory (Posner & Peterson, 1990): Vigilance is the ability to maintain attention over long periods of time, especially when the task is repetitive or requires sustained focus without immediate feedback.

Sensation vs. Perception

- Sensation refers to the process by which our sensory organs (e.g., eyes, ears, skin) detect physical stimuli from the environment (e.g., light, sound, heat). It's the raw data or input that comes from external stimuli.
- Perception is the process of interpreting and organizing this sensory information in a way that makes sense to us. It involves higher-level cognitive processes and can be influenced by expectations, experience, and attention.

Sensory Thresholds: refer to the minimum limits at which we can detect stimuli. These thresholds vary depending on the type of sensory input and individual differences.

There are a few key thresholds to know

- **Absolute Threshold:** It is the minimum intensity of a stimulus required for it to be detected by our sensory organs at least 50% of the time.
- **Difference Threshold (also known as Just Noticeable Difference or JND):** it is the smallest difference in intensity between two stimuli that can be detected at least 50% of the time.
- **Just Noticeable Difference (JND):** The JND is often used interchangeably with the difference threshold. It refers specifically to the smallest change in stimulus that a person can detect.

When perceiving forms, patterns, and objects, several concepts and processes come into play, including perceptual set, feature analysis, bottom-up processing, and top-down processing.

- **Perceptual Set:** it is a mental predisposition or expectation that influences how we interpret sensory information. It refers to the tendency to perceive things in a certain way based on our experiences, expectations, culture, or context.
- **Feature Analysis:** it is a process by which the brain breaks down a complex stimulus into its basic features or components to recognize the whole object or pattern. This approach is often seen as one of the earliest stages of perception.
- **Bottom-Up Processing:** it refers to a type of perception that starts with sensory input and builds up to a higher level of understanding. It begins with the raw sensory data and then moves up to form a more complex interpretation or perception.
- **Top-Down Processing:** it refers to the use of prior knowledge, expectations, and experiences to interpret sensory information. It starts with a higher-level cognitive process (such as expectations or knowledge) and works down to interpret the sensory data

Depth perception:

- It is the ability to perceive the world in three dimensions (3D) and judge the distance of objects.
- It allows us to understand how far away objects are, how they relate to one another in space, and how we navigate the environment.
- This ability is crucial for everyday activities like driving, walking, or catching a ball, as it helps us interact effectively with our surroundings.

Perceptual organization refers to the process by which our brain organizes and interprets sensory input to form meaningful perceptions of objects and scenes. This involves combining sensory information from our

environment in a way that helps us make sense of the world.

Gestalt Principles of Perceptual Organization

Gestalt psychologists proposed that perception is more than just the sum of individual sensory elements; instead, we tend to perceive objects as whole patterns or unified structures. They identified several principles that guide how we organize visual information: proximity, similarity, continuity etc.

Figure and Ground Segregation: In perceptual organization, figure and ground segregation refers to the ability to distinguish between a figure (the object of focus) and the background (the surroundings or backdrop).

- Figure: The main object or focus of our attention in a visual scene.
- Ground: The background or the space that surrounds the figure, which typically recedes into the background.

Phi Phenomenon

The phi phenomenon refers to the illusion of movement created when stationary objects are presented in rapid succession. This phenomenon is an important aspect of how we perceive motion.

Perceptual constancies refer to the ability of the brain to perceive objects as stable and unchanging, even when the sensory input changes. These constancies allow us to maintain a consistent and coherent view of the world, even as our perspective or environmental conditions shift.

- Size constancy refers to the ability to perceive an object as having a constant size, even when its distance from us changes, causing it to appear larger or smaller in our visual field.
- Shape constancy is the ability to perceive an object as having a constant shape, even when its orientation or angle changes, causing it to appear distorted.
- Brightness constancy is the ability to perceive the brightness of an object as constant, despite changes in lighting conditions.
- Location constancy refers to our ability to perceive an object as maintaining a stable position in space, even though the sensory input may suggest that the object is moving or displaced.

Visual illusions are perceptions that occur when our brain interprets sensory information in a way that doesn't match the physical reality of the situation.

Types of illusion:

- Müller-Lyer Illusion: In this illusion, two lines of the same length appear to be different lengths because of the direction of the arrows at the ends of the lines.
- Ponzo Illusion: In this illusion, two horizontal lines are placed over a set of converging lines (like a railroad track), and the top line appears longer than the bottom line, even though they are the same length.

MODULE 4

CONSCIOUSNESS

CONSCIOUSNESS refers to our awareness of thoughts, feelings, and the world around us. It includes states like waking consciousness, sleep, and altered states.

- Biological rhythms are natural cycles in physiological processes, with circadian rhythms being the most prominent. These rhythms regulate vital functions like sleep-wake cycles, body temperature, and hormone release.
- Circadian rhythms operate on a roughly 24-hour cycle, influenced primarily by light, and are controlled by the suprachiasmatic nucleus in the brain. Disruptions to circadian rhythms can lead to sleep disorders, fatigue, and health issues. Managing these rhythms through techniques like light exposure and chronotherapy can help improve well-being and performance

Sleep and Waking Cycle

- The sleep-wake cycle is a fundamental biological rhythm that regulates periods of sleep and wakefulness in a 24-hour cycle.
- This cycle is controlled by the body's circadian rhythm, which is influenced by external factors such as light and darkness.
- During the sleep-wake cycle, the body goes through various stages of sleep and periods of wakefulness, each playing a crucial role in maintaining physical and mental health.

Stages of Sleep

Stages are divided into Non-REM (Rapid Eye Movement) sleep and REM sleep.

The cycle of sleep stages repeats multiple times during the night, typically lasting 90-110 minutes per cycle.

Non-REM Sleep (NREM):

NREM sleep is divided into three stages: Stage 1, Stage 2, and Stage 3 (previously Stage 4 in earlier classifications). These stages progressively become deeper and more restorative.

Stage 1 (N1): This is the lightest stage of sleep, occurring when you first fall asleep.

- It lasts for a few minutes (typically 5-10 minutes) and is characterized by slow eye movements, reduced muscle activity, and relaxed body functions. People may experience the sensation of “falling” during this stage, leading to a hypnic jerk (a sudden muscle contraction).

Stage 2 (N2): This stage represents a deeper form of light sleep and accounts for about 45-55% of the total

sleep cycle. There is no eye movement, and heart rate and body temperature drop.

- Sleep spindles (brief bursts of brain activity) and K-complexes (large waves in EEG) appear in the brain during this stage, which are thought to play a role in memory consolidation and sleep stability.

Stage 3 (N3) - Deep Sleep:

- Also known as slow-wave sleep (SWS) or delta sleep, this is the deepest and most restorative stage of non-REM sleep.
- It is characterized by the presence of delta waves (high-amplitude, low-frequency brain waves) in EEG.
- This stage is crucial for physical restoration, growth, and immune system function. It typically makes up about 20-25% of total sleep in adults.
- People are very difficult to awaken from this stage, and if woken, they may feel disoriented.

REM Sleep (Rapid Eye Movement):

- REM sleep is the stage of sleep associated with vivid dreams and rapid eye movement. It occurs in cycles throughout the night, with the first REM period occurring about 70-90 minutes after falling asleep.

During REM sleep: The brain becomes highly active, with brain waves becoming more similar to those seen during wakefulness. Muscle atonia occurs (temporary paralysis of voluntary muscles) to prevent acting out dreams.

- This stage is also marked by increased heart rate, irregular breathing, and increased blood pressure.
- REM sleep periods increase in length as the night progresses, with the final REM period lasting up to 30 minutes or more.

Functions of Sleep

- Physical Restoration: Sleep, especially deep sleep (Stage 3 NREM), is essential for muscle repair, growth, and immune system function.
- Memory Consolidation: Sleep plays a critical role in memory consolidation — the process of converting short-term memories into long-term storage.
- Emotional Regulation: Sleep, particularly REM sleep, is involved in regulating emotions and mental health.
- Cognitive Functioning: Sleep is essential for maintaining cognitive processes like attention, learning, decision-making, and problem-solving.
- Energy Conservation: Sleep allows the body to conserve energy. During sleep, the metabolic rate drops, and energy expenditure is minimized, allowing the body to recover and replenish resources for the next day.

Functions of REM Sleep:

- Dreaming,
- Emotional and psychological processing
- Memory and learning
- Brain development
- Enhanced creativity and problem-solving.

DREAMS

Dreams are a natural part of sleep, occurring most frequently during REM sleep (Rapid Eye Movement), although they can also occur in non-REM sleep. They are characterized by vivid, often bizarre, and emotionally charged experiences that seem real to the dreamer at the time.

Altered States of Consciousness

An altered state of consciousness refers to a condition in which one's perception of reality is significantly different from the normal waking state. These states can be induced by various methods, such as hypnosis, meditation, and drugs.

Two widely studied altered states of consciousness are hypnosis and meditation.

- Hypnosis: An altered state of consciousness marked by deep relaxation and heightened suggestibility, often used for therapeutic purposes like pain management, behavioral change, and anxiety reduction.
- Meditation: A mental practice that induces relaxation and heightened awareness, with many benefits such as stress reduction, improved focus, and emotional regulation. It is often associated with altered states of consciousness that promote mental clarity and well-being

