

COURSE STRUCTURE- CCF, 2022

PSYCHOLOGY (MDC)

INTER DISCIPLINARY COURSE (IDC)

SEMESTER 1: POSITIVE PSYCHOLOGY

THEORY: 50 Marks

PRACTICAL: 25 Marks

Unit 1:Introduction: Positive Psychology: An Introduction, Perspectives on Positive Psychology: Western and Eastern, Character Strengths and virtues. **(15 hours)**

Unit 2a):Positive Emotional States and Processes: Happiness and Well being, Emotional Intelligence, Resilience **(7 hours)**

b) Positive Cognitive States and Processes: Optimism, Hope, Wisdom, (8 hours)

Practicum: (25 Hours)

Objectives: For each practicum, students are expected to know about the underlying theoretical constructs, be able to conduct the practicum and justify the method used, know about the instrument used, if any, and be able to explain the findings and link the findings with the theory.

1. Administration of Oxford Happiness Questionnaire

Readings:

Baumgardner, S.R. Crothers M.K. (2010). *Positive psychology*. Upper Saddle River, N.J.: Prentice Hall.

Carr, A. (2004). *Positive Psychology: The science of happiness and human strength*. UK: Routledge.

Peterson, C. (2006). *A Primer in Positive Psychology*. New York: Oxford University Press.

Seligman, M.E.P. (2002). *Authentic Happiness: Using the New Positive Psychology to Realize Your Potential for Lasting Fulfillment*. New York: Free Press/Simon and Schuster.

Snyder, C.R., & Lopez, S.J. (2007). *Positive psychology: The scientific and practical explorations of human strengths*. Thousand Oaks, CA: Sage.

Snyder, C. R., & Lopez, S. (Eds.). (2002). *Handbook of positive psychology*. New York: Oxford University Press.

Interdisciplinary Course in **Chemistry**

PAPER: CHEM-MD-IDC-Th

(Credit : Theory -02, Tutorial – 01)

Theory: (30 Lectures)

CHEMISTRY IN DAILY LIFE

Module : I

(10 Lectures)

Dairy Products:

Composition of milk and milk products. Analysis of fat content, minerals in milk and butter. Estimation of added water in milk. Beverages: Analysis of caffeine in coffee and tea, detection of chicory in coffee, chloral hydrate in toddy, determination of methyl alcohol in alcoholic beverages.

Food additives, adulterants, and contaminants:

Food preservatives like benzoates, propionates, sorbates, disulphites. Artificial sweeteners: Aspartame, saccharin, dulcin, sucralose, and sodium cyclamate. Flavors: Vanillin, alkyl esters (fruit flavors), and monosodium glutamate.

Artificial food colorants:

Coal tar dyes and non-permitted colors and metallic salts. Analysis of pesticide residues in food.

Module : II

10 Lectures)

Vitamins:

Classification and Nomenclature. Sources, deficiency diseases, and structures of Vitamin A1, Vitamin B1, Vitamin C, Vitamin D, Vitamin E & Vitamin K1.

Oils and fats:

Composition of edible oils, detection of purity, rancidity of fats and oil. Tests for adulterants like argemone oil and mineral oils. Halphen test.

Soaps & Detergents:

Definition, classification, manufacturing of soaps and detergents, composition and uses

Module : III**(10 Lectures)****Chemical and Renewable Energy Sources:**

Principles and applications of primary & secondary batteries and fuel cells. Basics of solar energy, future energy storer.

Polymers:

Basic concept of polymers, classification and characteristics of polymers. Applications of polymers as plastics in electronics, automobile components, medical fields and aerospace materials. Problems of plastic waste management. Strategies for the development of environment-friendly polymers.

Recommended Text Books:

1. B. K. Sharma: Introduction to Industrial Chemistry, Goel Publishing, Meerut (1998)
2. Ashtoush Kar. Medicinal Chemistry (Two Colour Edition), New Age International Pvt Ltd, 2022
3. Edward Cox Henry , The Chemical analysis of Foods , Hardcover , Hassell Street Press , 2021
4. Fred Billmeyer : Textbook of polymer science; Wiley 3rd addition.

Tutorial: (15 hours)**PAPER: CHEM-MD-IDC-Tu**

1. Estimation of Vitamin C.
2. Determination of Iodine number of oil.
3. Determination of saponification number of oil.
4. Determination of methyl alcohol in alcoholic beverages.

Botany

IDC (To be opted in 1st or 2nd or 3rd Semester)

BIostatistics (Theory)

Total marks- 75, Credits 3, Class 45 hours

1. **Biostatistics and Biometry:** Basics- Definition, statistical methods, basic principles, variables- measurements, functions, limitations and uses of statistics; Data, Sample, Population, Random sampling, Frequency distribution: Normal, Binomial and Poisson distribution.

(8 lectures)

2. **Central tendency:** Arithmetic Mean, Mode and Median; Measurement of dispersion- Coefficient of variation, Standard Deviation, Standard error of Mean.

(10 lectures)

3. **Test of significance:** Chi-square test for goodness of fit and Students' t test, Calculation of 'F' value and finding out the probability value for the 'F' value.

(12 lectures)

4. **Correlation coefficient:** Calculations of 'r' values and finding out the probability.

(3 lectures)

5. **Probability:** multiplicative and additive rules of probability: application and importance.

(5 lectures)

6. **Measurement of gene frequency:** Hardy-Weinberg equilibrium- conditions applied for its implications (simple numerical problems to calculate genotypic and allelic frequencies).

(7 lectures)

BIOSTATISTICS (Practical)
Total marks-25, Credit 1, Class 30 hours

1. Workout	15 marks
2. Classroom performance	5 marks
3. Viva	5 marks

1. Univariate analysis of statistical data: Statistical tables, mean, mode, median, standard deviation and standard error (using seedling population/ leaflet size), graphical representation of the data (frequency polygon, bar diagram, histogram).
2. Calculation of correlation coefficient values and finding out the probability.
3. Determination of goodness of fit in Mendelian mono-and dihybrid ratios (3:1, 1:1, 9:3:3:1, 1:1:1:1) by Chi-square analysis and comment on the nature of inheritance.
4. Calculation of 'F' value and finding out the probability for the F value.

Textbook references

1. Chap, T. Le. Introductory Biostatistics, Wiley Publications.
2. Barley, N.T.J. Statistical Methods in Biology, Latest Ed., Cambridge University Press
3. Zar, J.H. Biostatistical Analysis (3rd ed.), 1996, Prentice Hall.
4. Kar, D.K. and Halder, S. Plant Breeding & Biometry, 2006, New Central Book Agency.
5. Prasad, S. Elements of Biostatistics, Rastogi Publications (Current Ed.)
6. Datta, A.K. Basic Biostatistics and its applications, New Central Book Agency (P) Ltd.
7. Banerjee, P.K. Introduction to Biostatistics, S. Chand and Company Pvt. Ltd.
8. Singh, B.D. Plant breeding, Principles and methods (7th Ed.) 2005. Kalyani Publishers.