



## CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY

### B. Pharma First Year

### SECOND SEMESTER

S.No	Subject No.	Board of Studies	Subject	Periods Per Week		Scheme of Examination					Total Marks	Credit = $\frac{[L+[T+P]]}{2}$
				L	P	Theory			Practical			
						ESE	CT	TA	ESE	TA		
1	341211 (41)	Pharmacy	Advance Mathematics	5	-	70	15	15	-	-	100	5
2	341212 (41)	Pharmacy	Pharmaceutics-II (Physical Pharmacy)	5	-	70	15	15	-	-	100	5
3	341213 (41)	Pharmacy	Pharmaceutical Chemistry -III (Organic)	5	-	70	15	15	-	-	100	5
4	341214 (41)	Pharmacy	Pharmacognosy-I	5	-	70	15	15	-	-	100	5
5	341215 (41)	Pharmacy	Anatomy Physiology and Health Education -I	5	-	70	15	15	-	-	100	5
6	341221 (41)	Pharmacy	Pharmaceutics -II (Physical Pharmacy) Practicals	-	3	-	-	-	60	40	100	2
7	341222 (41)	Pharmacy	Pharmaceutical Chemistry -III (Organic -I)	-	3	-	-	-	60	40	100	2
8	341223 (41)	Pharmacy	Pharmacognosy-I (Practicals)	-	3	-	-	-	60	40	100	2
9	341224 (41)	Pharmacy	Anatomy, Physiology and Health Education -I Practicals	-	3	-	-	-	60	40	100	2
10	341225 (41)	Pharmacy	Pharmaceutical Field Work (Survey)	-	3	-	-	-	60	40	100	2
<b>TOTAL</b>				<b>25</b>	<b>15</b>	<b>350</b>	<b>75</b>	<b>75</b>	<b>300</b>	<b>200</b>	<b>1000</b>	<b>35</b>

Min. Pass Marks : (A) Theory ESA & TA+CT (Combined) : 50% , (B) Practical ESE & TA (Combined) : 50%

**Each Periods is of 50 Minutes**

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

<b>SEMESTER</b>	: 2 <sup>nd</sup>	<b>BRANCH</b> : B.PHARMA
<b>SUBJECT</b>	: Anatomy, Physiology and Health Education	<b>CODE</b> : 341215(41)
<b>TOTAL THEORY PERIODS</b>	: 40	<b>TOTAL TUT. PERIOD</b> : 1
<b>TOTAL MARKS IN END SEM EXAM</b>	: 70	
<b>MINIMUM NO. OF CLASS TESTS TO BE CONDUCTED</b>	: 2	

Branch: Pharmacy II Semester

Course: ANATOMY, PHYSIOLOGY AND HEALTH EDUCATION-I

Scope of anatomy and physiology and basic terminology used in these subjects.

Structure of cell, its components and their functions :

## **Elementary Tissues of the Human Body**

Epithelial, connective, muscular and nervous, tissues; their sub-types and characteristics.

## **Gaseous System**

Structure, composition and functions of skeleton, Classification of joints, Types of movement at joints, disorders of joints.

## **Skeletal Muscles**

Their gross anatomy, physiology of muscle contraction, physiological properties of skeletal muscle and their disorders.

## **Haemopoietic System**

Composition and functions of blood and its elements, their disorders, blood groups ,and their significance, mechanism of cc agulation; disorders of platelets and coagulation.

## **Lymph and Lymphatic System**

. Composition, formation and circulation of lymph ; disorder of lym and lymphatic system.

Basic physiology and function of spleen.

## **Cardiovascular System**

Basic anatomy of the heart, physiology of heart, blood vessels and circulation. Basis understanding of cardiac cycle, heart sounds and electrocardiogram. Blood pressure and its regulations. Brief outline of cardiovascular disorders like; hypertension, hypotension, arteriosclerosis angima, myocardial infraction, congestive heart failure and cardiac arrhythmias.

## **Health Education . –**

1. Concepts of health and diseases, disease agents and prevention of diseases.
2. Classification of food requirements, balanced diet, nutritional deficiency disorders, their treatment and prevention.
3. Demography and family planning : Demography cycle, family. Meaning various contraceptive methods. Medical termination of pregnancy.
4. First Aid Emergency treatment of shock, snake bites, burns, poisoning, fractures and resuscitation methods.

## **II-P-S ANATOMY, PHYSIOLOGY AND HEALTH EDUCATION-I PRACTICALES**

Study of human skeleton.

Study of different systems with the help of chart:, and models

Microscopic study of different tissues.

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<b>SEMESTER</b>	: 2 <sup>nd</sup>	<b>BRANCH</b> : B.PHARMA
<b>SUBJECT</b>	: Pharmaceutical Chemistry	<b>CODE</b> : 341213(41)
<b>TOTAL THEORY PERIODS</b>	: 40	<b>TOTAL TUT. PERIOD</b> : 1
<b>TOTAL MARKS IN END SEM EXAM</b>	: 70	
<b>MINIMUM NO. OF CLASS TESTS TO BE CONDUCTED</b>	: 2	

## **Branch: Pharmacy-II Semester**

Course: PHARMACEUTICAL CHEMISTRY-III (ORGANIC-I) (Theory)

### **Structure and Properties**

Atomic structure, Atomic orbital, Molecular orbital theory, Wave equation, Molecular orbital, Bonding and ant bonding orbital, Covalent bond, Hybrid orbital, Intermolecular forces, Bond dissociation energy polarity of bonds, Polarity of molecules, Structure and physical properties, Acids and Bases.

### **Stereochemistry**

Isomerism and nomenclature any associated physicochemical properties, Optical activity. Stereo isomerism, specification of configuration, Reactions involving

### **Structure Nomenclature, Preparation and Reaction of :**

Alkanes, Alkenes, Alkynes.

Cycloalkanes, dienes, Benzene, involving stereoisomer, Confirmations.

Carboxylic acids, Functional derivatives of carboxylic acids, Reaction intermediates –

Carbotations, Carbanions, Carbenes, Nitrene and Nitrenium ions.

### **II-P-3 PHARMACEUTICAL CHEMISTRY-III (ORGANIC-I) PRACTICALS**

☞☞ Identification of organic compounds and their derivative.

☞☞ Preparation of selected organic compounds

☞☞ Introduction to the use of stereo models.

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<b>SEMESTER</b>	: 2 <sup>nd</sup>	<b>BRANCH</b> : B.PHARMA
<b>SUBJECT</b>	: Pharmacognosy	<b>CODE</b> : 341214(41)
<b>TOTAL THEORY PERIODS</b>	: 40	<b>TOTAL TUT. PERIOD</b> : 1
<b>TOTAL MARKS IN END SEM</b>	: 70	
<b>EXAM</b>		
<b>MINIMUM NO. OF CLASS TESTS TO BE CONDUCTED</b>	: 2	

Branch: Pharmacy II Semester  
Course : PHARMACOGNOSY-I (Theory)

Definition, history, scope and development of Pharmacognosy. Sources of crude drugs and methods of their classification:

Cultivation, collection; processing and storage of crude drugs. Factors affecting cultivation of medicinal

Plant hormones and their applications. Influence of polyploidy mutation and hybridization with reference to medicinal plants.

Pest control and natural pest control agents.

Quality Control of Crude Drugs: Different types of Adulteration and their evaluation using various methods like Organoleptic, Microscopic, Physical, Chemical, and Biological.

An introduction of various types of primary and secondary metabolites as active constituents of crude. General methods of their isolation, classification, properties and systematic pharmacognosic study of

1. Carbohydrates, and drugs belonging to this class like; Agar, Gaur gum, Acacia, Honey, Isagpol, Strach, Sterculia, Tragacanth.
2. Lipids and drugs belonging to this class likes; Castor oil, Beeswax, Cocoa butter, Hydncarpus oil, kokum butter, Cod-liver oil, wool fat.
3. Resins and Tannis and drugs belonging to this class like; podophyllu, Balsam, Turmeric, Ginger, Ipomoea, Myroballan.
4. Pharmaecutical aids like, Talc, Kaolin, Bentonite, Gelatin, Cotton, Viscose rayon.

I. Evaluation of crude drugs mentioned in theory using morphology, micrc.scopy (both in whole and powdered forms as available), chemical tests for general and specific constituents.

2. Study of fibers and pharmaceutical aids.

## II-P-4 PHARMACOGNOSY-I PRACTICALS

1. Evaluation of crude drugs mentioned in theory using morphology, microscopy (both in whole and powdered forms as available) chemical tests for general and specific constituents.
2. Study of fibers and pharmaceutical aids.

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<b>SEMESTER</b>	: 2 <sup>nd</sup>	<b>BRANCH</b> : B.PHARMA
<b>SUBJECT</b>	: Pharmaceutics	<b>CODE</b> : 341212(41)
<b>TOTAL THEORY PERIODS</b>	: 40	<b>TOTAL TUT. PERIOD</b> : 1
<b>TOTAL MARKS IN END SEM</b>	: 70	
<b>EXAM</b>		
<b>MINIMUM NO. OF CLASS TESTS TO BE CONDUCTED</b>	: 2	

Branch: Pharmacy-II Semester

Course : Pharmaceutics (Physical Pharmacy) (Theory )

## **Matter: State and Selected Properties**

State of matter, change in the state of matter, latent heats and vapour pressure, Sublimation: Critical I point, Eutectic, mixtures, gases, Aerosol: Inhalers, relative humidity, liquid complexes, liquid crystals, glassy state, Solids : Crystalline and amorphous; polymorphism.

## **Micromeritics and Powder Rheology –**

Particle size and distribution, average particle size, number and weight distribution, particle number, methods for determining particle volume, optical microscopy, sieving, sedimentation, particle shape, specific surface, methods for determining surface area, Derived properties of powders: Porosity, packing arrangement, densities, bulkiness and flow properties.

## **Surface and Interfacial Phenomenon**

Newtonian Systems : Law of flow, kinematics viscosity; effect of temperature, Non-Newtonian Systems; pseudoplastic, dilatent and plastic flow, Thixotropy, measurement of thixotropy, thixotropy formulation, Determination of viscosity, capillary, falling ball, rotational viscometers. Dispersed Systems –

**Colloidal Dispersion** : : Definition, types, properties of colloids, protective colloids, application of colloids in Pharmacy.

Suspensions and Emulsions : Interfacial properties of suspended particles, Setting in suspensions, Sedimentations parameters, Wetting of particles, Controlled flocculation. Flocculation in structured vehicles.

**Emulsions** : Types, Theories and Physical stability.

**Complexation** : Classification of complexes, Methods of preparation and analysis, Pharmaceutical applications.

## **Kinetics and Drug Stability –**

General considerations and concepts, half-life determination, Influence of temperature, light, solvent, catalytic, species and other factors, Accelerated stability study, expiration dating.

## **Buffers –**

Buffer equation and buffer capacity, buffers in pharmaceutical systems, buffered isotonic, solutions, measurement of tonicity calculations, method of adjusting isotonicity.

## **II-P-2 PHARMACEUTICS – II (PHYSICAL PHARMACY) PRACTICALS**

Experienced based on theory.

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<b>SEMESTER</b>	: 2 <sup>nd</sup>	<b>BRANCH</b> : B.PHARMA
<b>SUBJECT</b>	: Advanced Mathematics	<b>CODE</b> : 341211(41)
<b>TOTAL THEORY PERIODS</b>	: 40	<b>TOTAL TUT. PERIOD</b> : 1
<b>TOTAL MARKS IN END SEM</b>	: 70	
<b>EXAM</b>		
<b>MINIMUM NO. OF CLASS TESTS TO BE CONDUCTED</b>	: 2	

**Branch** : Pharmacy II Semester  
**Course** : Advanced Mathematics

## **Differential equations –**

Revision of integral calculus, definition and formation of differential equations, equations of first order and first degree, variable separable, homogeneous and linear differential equations and equations reducible to such types, linear differential equations of order greater than one with constant coefficients, complementary function and particular integral, simultaneous linear differential equations, pharmaceutical equations.

## **Laplace Transforms –**

Definition, transforms of elementary functions, properties of linearity and shifting, inverse laplace transforms of derivatives, solution of ordinary and simultaneous differential equations.

## **Biometrics –**

Significant digits and rounding of numbers, data collection, random and non-random sampling methods, sample size, data organization, diagrammatic representation of data, bar, pie, 2-D and 3-D diagrams, measures of central tendency, measures of dispersion, standard deviation and standard errors of means, coefficient of variation, confidence (fiducial) limits, probability and events, Bayes theorem, probability theorems, probability distributions, elements of binomial and poisson distribution, normal distribution curve and properties, kurtosis and skewness, correlation and regression analysis, methods of least squares, statistical inference students and paired ttest, ftest and elements of ANOVA, applications of statistical concepts in Pharmaceutical Sciences.