

Biodiversity

Unit - I

Biodiversity –Definition, different levels, importance, threats, Global and local efforts for conservation.

Unit - II

Microbial Diversity - Different forms, Utility – industrial, pharmaceutical, agricultural, methods for isolation and identification

Unit - III

Plant Diversity – Sampling for quantification, different forms, agrodiversity, forests and medicinal plants

Unit - IV

Faunal Diversity – Origin of life, characteristics, different forms, invertebrates, vertebrates, evolutionary trend

Suggested readings

1. Biodiversity, TERI, New Delhi
2. Textbook of Microbiology, S Chand and Co., New Delhi
3. An Advanced Textbook on Biodiversity, Oxford & IBH, New Delhi
4. Ecology, Cengage Learning, New Delhi

Gujarat University

B.Sc. (Environmental Science) CBCS Syllabus (June 2011) Semester I and II

ENVSC-101 Life at a Glance (40 Hours)

Origin and evolution of life

History of Earth, Determination of age of the Earth

Theories of origin of life, Millers experiment, Spontaneous generation

Cell Theory, Cell differentiation, Levels of organization, Nature of the earliest organisms,

Evolution of Prokaryotes, Eukaryotes, Mitochondria and Chloroplast

Quest for extra-terrestrial life

Whittaker's five-kingdom classification

Plant Kingdom

General characters of plant, Body organization: Root, Stem and Leaves; Tissues: Dermal, Vascular and Ground

Growth: Primary, Secondary, Morphogenesis and Differentiation

Common types of plants: Primitive plants Bryophytes, Traditional plants, Vascular plants, Adaptation to land and response to environment

Outline of Kingdom *Plantae*

Animal Kingdom

General characters of animal, Animal evolution, Body organization: Systems, Organs, Tissues, Coordination, Energy requirements

Primitive and advanced marine animals, Adaptation to land, Exchange with Environment,

Outline of Kingdom *Animalia*

The Microbial World

Structure, General character, Reproduction, Classification and Economic importance of Fungi, Algae and Protozoa

Structure, Chemistry and Reproduction of viruses

Microbes in Environment: Role in Pathogenesis and Elemental cycling

Extreme environments, Biodiversity therein

Reference

1. Elden D Enger, FC Ross and DB Bailey (2005) Concepts in Biology, (11th Edn), TMH
2. Reece JB, Urry LA, Cain ML Wasserman SA, Minorsky PV and RB Jackson (2010) Campbell Biology (9th Edn), Pearson
3. Lack Andrew and David Evans (2005) Plant Biology, (2nd Edn), BIOS Instant Notes, Taylor and Francis
4. Cowan K and KP Talaro (2009) Microbiology: A Systems Approach, (2nd Edn), McGraw-Hill
5. Purves William K, David Sadava, Gordon H. Orians, and H. Craig Heller (2006) Life: The Science of Biology, (7th Edn), Academic Internet

ENVSC-102 Practical (40 Hours)

Practical Life at a Glance (101)

1. Study of Laboratory Equipments
2. Preparation of Standard Solution and Buffers
3. Hanging-drop preparation and observation of motility
4. Microscopic observation of wet-mount preparation from fungi
5. Monochrome Staining of Yeasts
6. Estimation of reducing sugar by Cole's method

7. Colorimetric estimation of Protein using Biuret Reagent
8. Colorimetric estimation of Glucose using Glucose oxidase

ENVSC-103 Cell: The Unit of Life (40 Hours)

Structure of cell

Chemistry and Ultrastructure of Cell wall, Membrane, Flagella and Cilia
Organelles Mitochondria, Chloroplast, Golgi bodies, Peroxysome, Endoplasmic reticulum, Ribosome
Nature of Cytosol, Cytoskeleton structures
Cellular diversity at structural and compositional levels among Prokaryotes, Archeobacteria, and Eukaryotes (Plant, Animal and Fungi)

Cellular Metabolism

Oxidation-Reduction, Energy and Carbons source utilization, Electron transport chain and ATP generation

Metabolism: Anabolism, Catabolism, Respiration, Fermentation, Photosynthesis

Nutrient uptake Active transport, Passive transport, Facilitated diffusion, Group translocation

Enzymes: Properties, Mechanism of catalysis, Allosteric controls

Cell Division

Cell division, Phases, Mitosis and Meiosis

Growth and Tumour

Cell cycle, Senescence and Apoptosis

Cell Expression

Central dogma of Life, Concept of Gene, Transcription, Translation and expression

Operon model, Coordination of Metabolism at enzyme Activity and Synthesis levels

Cell communication: Signal molecules, Receptors, Junction, Plasmodesmata and Cell signalling

Reference

1. BIOTOL Series (1991) The Molecular Fabric of Cells (Biotechnology by Open Learning), Butterworth Heinmann
2. BIOTOL Series (1991) Infrastructure and Activities of Cell (Biotechnology by Open Learning), Butterworth Heinmann
3. BIOTOL Series (1992) Principles of Cell Energetics, (Biotechnology by Open Learning), Butterworth Heinmann
4. Elden D Enger, FC Ross and DB Bailey (2005) Concepts in Biology, (11th Edn), TMH
5. Purves William K, David Sadava, Gordon H. Orians, and H. Craig Heller (2006) Life: The Science of Biology, (7th Edn), Academic Internet
6. Lodish Harve et al (2008) Molecular Cell Biology, (6th Edn), Freeman
7. Karp Gerald (2005) Cell and Molecular Biology – Concepts and Experiments, (4th Edn), Wiley
8. Robertis EDP De and EMF De Robertis, Jr (2001) Cell and Molecular Biology (8th Edn), Lippincott William and Wilkins
9. Cassimeris Lynne, VR Lingappa and G Plopper (2011) Lewin's Cells (2nd Edn), Jones and Bartlett
10. Pollard Thomas D and WC Earnshaw (2008) Cell biology, (2nd Edn), Elsevier

ENVSC-104 Practical (40 Hours)

Practical Cell: The Unit of Life (103)

1. Aseptic handling and transfer of microorganisms
2. Differential staining by Gram stain
3. Nucleus Staining from human WBCs/ *Chiromonas*
4. Preparation of permanent slides showing stages of Mitosis (Onion) and Meiosis (Anther)
5. Human Karyotype staining and banding patterns
6. Counting of cell count and viability ratio by vital stain in Haemocytometer
7. Colorimetric estimation of DNA using Diphenylamine
8. Colorimetric estimation of RNA using Orcinol

Gujarat University
Choice Based Credit System (CBCS)
Semester-I
Syllabus

EC 101: Mathematical basics and Quantitative skills

Hours: 3/ week

Credit 2

Unit-1. Trigonometry:

Unit circle, trigonometric functions, values of trigonometric function at distinct points, relation among trigonometric functions, trigonometric formulae, $\sin(x \pm y)$, $\cos(x \pm y)$, $\tan(x \pm y)$, $\sin c \pm \sin d$, $\cos c \pm \cos d$, $2\sin x \cos y$ (and others), inverse of trigonometric functions.

Unit-2. Co-ordinate Geometry and Vectors:

Distance Formula, Section Formula, Equation of a line and its slope, intersection of two lines, Equation of a circle and its tangent, elementary vector algebra.

Unit-3. Limit and Differentiation:

Right hand limit, Left hand limit and limit of a function. $\lim_{x \rightarrow a} \frac{x^n - a^n}{x - a}$, $\lim_{x \rightarrow 0} \frac{\sin x}{x}$, $\lim_{h \rightarrow 0} \frac{a^h - 1}{h}$ and $\lim_{n \rightarrow \infty} (1 + \frac{1}{n})^n$, continuity, derivatives of x^n , e^x , $\log x$, trigonometric functions, inverse trigonometric functions, chain rule, geometric meaning of derivative.

Unit-4. Integration:

Integration of x^n , e^x , trigonometric functions, well known functions like $\frac{1}{x^2 \pm a^2}$, $\frac{1}{\sqrt{x^2 \pm a^2}}$, $\sqrt{x^2 \pm a^2}$, Method of substitution, integration by parts, definite integral (Up to Fundamental Theorem of Integral Calculus).

N.B. All the results / formulae are without proof.

Books: (1) Gujarat Rajya Pathya Pustak Mandal for std 11 and std 12.

(2) A Textbook for class XI & XII, National Council of Educational Research and Training.

(3) A Class Book of Mathematics for class XII by Chakrabarty S. K., Biswajit Bhagwati, S. Chand Publishers.

(4) Short Calculus by Serge Lang, Springer(India)

Elective paper – Public Health

Unit 1 : Public Health

Introduction to Public Health, function Laws, governemnt and public Health

Unit 2 : Environmental issues of Public Health

Air, Water, Solid waste hazard, safe food and drugs, population

Unit 3 : Analytic Methods

Analytical methods of Public Health

Remedial basis of Public Health

Unit 4 : Public Health and Medical care

Public health programmes and medical care in Infectious desease (eg 'TB), Communicable diseases, vaccinnattion, sterilization programmes, family planning, AIDs awareness, child obesity, malnutrition, Smoking and other tobacco related issues

Ref.

1. Bernard J Turnock : Public Health : what it is and how it works ? (4tj ed) Jones and Barlett Publishers, 2009
2. Mary jane Schneider :PH
3. Douglas Scutchfield F and William Keck C : Principles of Public Health practic (2nd ed), Thomson learning

Elective Paper : Nutrition and Dietetics

Unit 1 : General Nutrition

1. Introduction and definition of food and nutrition, basic food groups.
2. Energy yielding, body building and protective foods.
3. Classification of food
4. Description of proximate principles.

Unit 2:

1. Role of various vitamins and minerals
2. Balanced diet for various groups.
3. Assessment of nutritional status
4. Diet surveys for individuals and family

Unit 3 : Menu planning and dietetics

1. Diet during physiological stress
2. Diet in obesity and under weight
3. Diet in fever
4. Diet in malnutrition

Unit 4 :

1. Diet in liver diseases
2. Diet in diabetes
3. Diet and anaemia
4. Diet in cancer

Ref :

1. B Shrilakhshmi : Dietetics (5th ed) (2006)
2. R. Rajalakhshmi : Applied Nutrition.
3. MS Banaji, Rao and Reddy : Human Nutrition (2nd ed) (2004)
4. ME Shils, JA Olson and M Shike : Modern Nutrition in health and disease (10th ed) (2006)
5. B Shrilakhmi : Food science (3rd ed) (2004)
6. Kathleen Mahan, Stump SE : Krause's Food, nutrition and diet therapy (11th ed), (2004).
7. B Shrilakhmi : Nutrition Science (2006)
8. C Gopalan, r Sastri and SC Balasubramanian : Nutritive value of Indian Foods (2007)

**First year B. Sc.
Elective- Forensic Science**

- Unit 1 -** Definition and scope of Forensic Science
History and Development of Forensic Science
Development of Forensic Science in India
- Unit 2 -** Crime,
Types of crimes
Crimes in India
Crime Scene Management,
Crime Scene procedures,
Protection of crime scene physical evidence-
Scientific collection of physical evidence
Crime scene management in man made and natural disaster.
- Unit 3 -** Duties of forensic scientist,
Various divisions of crime investigation –
Toxicology
Biology
Serology
Chemistry
Physics
Ballistics
Prohibition
Document and other divisions.
- Unit 4 -** Specialised facilities offered by forensic science laboratory –
DNA fingerprinting
Polygraph
Narco analysis
Brain electrical oscillation signature proficiency (BEOSP)
Cyber forensic
Tape and video authentication
Speaker identification etc.

References :

- (1) Introduction to Forensic Science in Crime Investigation –Dr.Rukmani Krishnamurty, Selective and Scientific Books, 1st edition 2011
- (2) Criminalistics - An Introduction to Forensic Science- Richard Saferstein, Pearson Prentice Hall, 8th Edition

રાષ્ટ્રીય સેવા યોજના
(National Service Scheme)

સૂચિત અભ્યાસક્રમ

વર્ષ 2018

સેમેસ્ટર- ૧

કુલ વ્યાખ્યાનોની સંખ્યા – ૨૦

યુનિટ ૧ :- રાષ્ટ્રીય સેવા યોજના – પરિચય અને પાયાના ખ્યાલો (૦૫)

(a) રા.સે.યો.ના ઇતિહાસ, જીવન દ્રષ્ટી(philosophy), લક્ષ્ય અને હેતુઓ. (૦૩)

(b) ચિન્હ, ધ્વજ,મુદ્રાલેખ, ગીત, બિલ્લો વગેરે. (૦૨)

યુનિટ ૨ :-રાષ્ટ્રીય સેવા યોજનાના કાર્યક્રમો અને માળખું (૦૪)

(a) રચનાત્મક માળખું, રા.સે.યો.ના અધિકારીઓ/કર્મચારીઓની કામગીરી અને જવાબદારીઓ. (૦૨)

(b) નિયમિત પ્રવૃત્તિઓ, વિશિષ્ટ શિબિર અને એક દિવસીય શિબિરના ખ્યાલો. (૦૨)

યુનિટ ૩ :- રાષ્ટ્રીય સેવા યોજનાની પ્રવૃત્તિઓ તથા નાણાકીય વ્યવસ્થા (૦૬)

(a) ગ્રામ વિસ્તાર/ઝુપડપટ્ટી વિસ્તાર દત્તક લેવા અંગેના આધારો તથા સર્વેક્ષણ માટેની કાર્ય પદ્ધતિ. (૦૩)

(b) યોજનાની નાણાકીય વ્યવસ્થા.(૦૨)

(c) દૈનિક નોંધપોથીની જાળવણી. (૦૧)

યુનિટ ૪ :- ભારત સરકારની યોજનાઓ તથા યુવાન

(૦૫)

(a) ભારત સરકારની યુવાઓને લગતી યોજનાઓ અને અન્ય કાર્યક્રમો. (૦૨)

(b) વિવિધ સંસ્થાઓ સાથે સંકલન (૦૧)

(c) સામાજિક પરિવર્તનના અગ્રેસર (પ્રતિનિધિ) તરીકે યુવાન (૦૨)

રાષ્ટ્રીય સેવા યોજના
(National Service Scheme)
યુવા નેતૃત્વ અને રાષ્ટ્ર નિર્માણ

સેમેસ્ટર- ૨

(B.A. – Elective-II,113)

(B.Sc.-Elective)

(B.com.-Soft Skill)

- સૈધાંતિક – ૭૦
- વ્યવહારિક પ્રકલ્પ – ૩૦

કુલ વ્યાખ્યાનોની સંખ્યા – ૨૦

યુનિટ ૧ :- યુવા નેતૃત્વનું મહત્વ અને ભૂમિકા

(૦૬)

(a) નેતૃત્વનો અર્થ અને પ્રકારો (૦૨)

(b) યોગ્ય નેતૃત્વના ગુણો, નેતૃત્વના લક્ષણો (૦૨)

(b) યુવા નેતૃત્વનું મહત્વ અને ભૂમિકા (૦૨)

યુનિટ ૨ :- જીવન કૌશલ્યો

(૦૫)

(a) જીવન કૌશલ્યોની વ્યાખ્યા અને મહત્વ (૦૨)

(b) સમસ્યા નિવારણ અને નિર્માણ નિર્ધારણ (૦૩)

યુનિટ ૩ :- સામાજિક સંવાદીતા અને રાષ્ટ્રીય એકાત્મતા

(૦૫)

(a) રાષ્ટ્ર નિર્માણમાં (શાંતિ સ્થાપના અને સંઘર્ષ નિવારણમાં) યુવાનોની ભૂમિકા (૦૫)

યુનિટ ૪ :- ભારતમાં યુવા વિકાસના કાર્યક્રમો

(૦૪)

(a) યુવા વિકાસ કાર્યક્રમો-રાષ્ટ્રીય કક્ષાએ, રાજ્યકક્ષાએ સ્વૈચ્છિક ક્ષેત્રે (૦૪)

National Service Scheme

Youth Leadership and nation building

SEMESTER-II

(B.A. – Elective-II,113)

(B.Sc.-Elective)

(B.com.-Soft Skill)

- Theory Weight – 70
- Practical/Project work – 30

No. of Lectures - 20

Unit 01 :- Importance and Role of Youth Leadership

(06)

- (a) Meaning and types of leadership(02)
- (b) Qualities of good leaders; traits of Leadership(02)
- (b) Importance and role of youth leadership(02)

Unit 02:- Life Competencies

(05)

- (a) Definition and Importance of life competencies(02)
- (b) Problem-solving and decision-making(03)

Unit 03 :- Social Harmony and National Integration

(05)

- (a) Role of youth (peace-building and conflict resolution) in Nation building.(05)

Unit 04 :- Youth Development Programmes in India

(04)

- (a) Youth development programmes at the National Level, State Level and voluntary sector.(04)

ફેક્સ : (૦૭૯) ૨૬૩૦૨૬૫૪
ટેલિફોન : ૨૬૩૦૧૩૪૧-૨૬૩૦૦૩૪૨-૪૩
૨૬૩૦૦૧૨૬



Fax : (079) 26302654
Telephone : 26301341-26300342-43
26300126

ગુજરાત યુનિવર્સિટી કાર્યાલય,
પોસ્ટ બોક્સ નં ૪૦૧૦,
નવરંગપુરા, અમદાવાદ - ૩૮૦ ૦૦૯

ગુજરાત યુનિવર્સિટી
GUJARAT UNIVERSITY
www.gujaratuniversity.org.in

Office of the Gujarat University,
Post Box No 4010,
Navarangpura, Ahmedabad - 380 009

નં.એકેડેમિક/૩૨૦૬૨/૨૦૨૨

તા.૨૦/૬/૨૦૨૨

પરિપત્ર

આથી ગુજરાત યુનિવર્સિટી સંલગ્ન વિનયન,વાણિજ્ય તથા સાયન્સ કોલેજોના આચાર્યશ્રીઓને
આદેશ અનુસાર જણાવવાનું કે, નીચે મુજબના અભ્યાસક્રમનો અમલ કરવાનો રહેશે.

1. NCC: B.Sc. Elective /B.Com Soft Skill/ B.A Soft Skill-Semester: 1 & 2.
(Effective From June 2022-23)

- શૈ.વર્ષ ૨૦૨૨-૨૦૨૩થી જે કોલેજોમાં NCC પ્રવૃત્તિઓ ચાલતી હોય તેવી કોલેજોમાં જ ઉપરોક્ત અભ્યાસક્રમ માત્ર NCC કેડેટસને પ્રથમ વર્ષના (સેમેસ્ટર-૧ અને ૨) વૈકલ્પિક વિષયો પૈકી એક વિકલ્પ રૂપે આપી શકાશે.આ અભ્યાસક્રમ માત્ર ઇનસર્વિસ એસોસિએટ NCC ઓફિસર (ANO) હોય તે જ ભણાવી શકશે.

ઉપરોક્ત અભ્યાસક્રમ ગુજરાત યુનિવર્સિટી વેબસાઈટ પરથી મેળવવાનો રહેશે. ગુજરાત યુનિવર્સિટી વેબસાઈટ નીચે મુજબ છે.

<http://www.gujaratuniversity.ac.in> Path: Student/ Downloads / Syllabus

આપનો વિશ્વાસુ

નાયબ કુલસચિવ

પ્રતિ,

૧. ગુજરાત યુનિવર્સિટી સાથે સંલગ્ન અમદાવાદ તથા ગાંધીનગર જીલ્લાની સર્વે વિનયન,વાણિજ્ય, તથા સાયન્સ કોલેજોના આચાર્યશ્રીઓ તરફ.
૨. પરીક્ષા નિયામકશ્રી, પરીક્ષા વિભાગ ગુજરાત યુનિવર્સિટી, અમદાવાદ-૯
૩. ગ્રંથપાલશ્રી ગુજરાત યુનિવર્સિટી ગ્રંથાલય, ગુજરાત યુનિવર્સિટી, અમદાવાદ-૯
૪. ગ્રંથપાલશ્રી, ગુજરાત યુનિવર્સિટી ગ્રંથાલય, ગુજરાત યુનિવર્સિટી અમદાવાદ-૯
૫. ડીરેક્ટરશ્રી, રોલાવાલા કોમ્પ્યુટર સેન્ટર, ગુજરાત યુનિવર્સિટી અમદાવાદ-૯

GUJARAT UNIVERSITY
B.A Soft Skill/B.Com Soft Skill/B.Sc. Elective
Semester – I
(Effective from Jun 2022)
National Cadet Corps

Objective:

- a) To develop character, comradeship, discipline, leadership, secular outlook, spirit of adventure amongst the youth.
- b) To create awareness about the Defence Services.
- c) To create a human resource of organized, trained & motivated youth, to provide leadership in all walks of life.

Unit-I:

INTRODUCTION OF NCC ORGANIZATION:

Introduction, Aims of NCC, Genesis: Birth of the National Cadet Corps and Inauguration of NCC Motto of NCC, Core Values, NCC Flag, History of NCC Song, NCC Song Lyrics, Objectives of NCC, Organization of the NCC.

Unit-II:

INCENTIVES TO CADETS AND DUTIES OF NCC CADETS:

Introduction, Incentives by the Central Government, Incentives by State Governments, Admission in Educational Institutes.

Introduction, The Cadet, Duties and Responsibilities of Cadets.

Unit-III:

NCC CAMPS: TYPES AND CONDUCT

Introduction; Types of Camps: Annual Training Camps/Combined Annual Training Camps (ATCs/CATCs), Centrally Organized Camps (COCs), Military Attachment Camp and Attachment Training IMA/OTA; Training Activities in Camp; Republic Day Camp; Ek Bharat Shreshth Bharat Camp.

Unit-IV:

INTRODUCTION TO MAP READING:

Definition of Map, Conventional Signs, Scales and Grid System, Methods of Expressing a Scale, Definition of Grid and Grid Lines, Topographical Forms and Technical Terms, Relief Contours and Gradients, Cardinal points and types of north.

Text Book: NCC Cadet's Hand Book (Common Subjects) SD/SW (Year: 2019) Unit: 1, 2, 3

NCC Cadet's Hand Book (Specialized Subjects) SD/SW (Year: 2019) Unit: 4

Ref. Book: NCC Cadet Handbook

GUJARAT UNIVERSITY
B.A Soft Skill/B.Com Soft Skill/B.Sc. Elective
Semester – II
(Effective from Jun 2022)
National Cadet Corps

Unit-I:

ARMED FORCES:

Introduction; Army; Navy; Air Force; Police Organisations & Central Armed Police Forces; Badges of Ranks, Honours and Awards in Armed Forces, Police and Central Armed Police Forces; Role and Task of Army, Police & CAPF; Fighting Arms, Role and Tasks; Supporting Arms, Role and Tasks; Supporting Services, Role and Tasks; Role and Task of Central Armed Police Forces & Police; Other Central Investigation and Intelligence agencies.

Unit-II:

CIVIL DEFENCE AND DISASTER MANAGEMENT:

Introduction, National Disaster Management Authority (NDMA), Organisation of NDMA, National Disaster Response Force (NDRF), Types of Disasters, Classification of Disasters, Essential Services and their Maintenance, Types of Maintenance Required for Essential Services, Role of NCC Cadets in Maintaining Essential Services, Employment of NCC Cadets during Natural Disasters, Effects of Natural Disasters, Types of Assistance Required, Assistance by NCC during Natural Disasters, Method of Providing NCC Assistance, Civil Defence Services and their Duties.

Unit-III:

NATURAL - MAN MADE DISASTERS AND FIRE SERVICES:

Introduction, Precautionary Measures to be followed by NCC Cadets, Floods, Tsunami, Earthquakes, Accidents.

Introduction, Causes and Prevention of Fire, Prevention of Fire, Fire Fighting, Fire Fighting Parties, Fire Fighting Equipments.

Unit-IV:

HYGIENE, SANITATION AND FIRST AID:

Introduction, Personal Hygiene, Food Hygiene and Camp Hygiene.

Introduction; Injuries to Internal Organs; Snake, Scorpion and Dog Bite; Asphyxia; First Aid for different type of fractures; Treatment and care of Wounds.

Text Book: NCC Cadet's Hand Book (Specialized Subjects) SD/SW (Year: 2019) Unit: 1
NCC Cadet's Hand Book (Common Subjects) SD/SW (Year: 2019) Unit: 2, 3, 4

Ref. Book: NCC Cadet Handbook