



MANONMANIAM SUNDARANAR UNIVERISTY,  
TIRUNELVELI-12

## SYLLABUS

### UG - COURSES – AFFILIATED COLLEGES

Course Structure for B. Sc. Physical Education

(Choice Based Credit System)

(with effect from the academic year 2023-2024 onwards )



| Semester-III |                |   |                              |        |
|--------------|----------------|---|------------------------------|--------|
| Part         | Subject Status | Subject Title                           | Subject Code                 | Credit |
| I            | LANGUAGE       | TAMIL/MALAYALAM/HINDI                   | E1TL31/<br>E1MY31/<br>E1HD31 | 3      |
| II           | ENGLISH        | ENGLISH                                 | E2EN31                       | 3      |
| III          | CORE VI        | SPORTS PSYCHOLOGY AND SOCIOLOGY         | EMPE31                       | 5      |
| III          | CORE VII       | SPORTS BIOMECHANICS AND KINESIOLOGY     | EMPE32                       | 5      |
| IV           | ELECTIVE       | TEACHING PRACTICE                       | EEPE31                       | 3      |
| IV           | SEC            | APPLIED SPORTS PSYCHOLOGY               | ESPE31                       | 1      |
| IV           | EVS            | ENVIRONMENTAL STUDIES                   | EEVS31                       | 2      |
|              |                | NAAN MUTHALVAN<br>Fitness and Wellness* |                              | 2      |



**Total Marks: 100 Internal Exam: 25 marks + External Exam: 75 marks**

**A. Scheme for internal Assessment:**

Maximum marks for written test: **20 marks**

**3 internal tests**, each of **1 hour** duration shall be conducted every semester.

To the average of the **best two** written examinations must be added the marks scored in. The **assignment** for 5 marks.

The break up for internal assessment shall be:

Written test- 20 marks; Assignment -5 marks Total - 25 marks

**B. Scheme of External Examination**

**3 hrs.** examination at the end of the semester

A – Part : 1 mark question two - from each unit

B – Part : 5 marks question one - from each unit

C – Part : 8 marks question one - from each unit

➤ **Conversion of Marks into Grade Points and Letter Grades**

| S.No | Marks  | Letter Grade | Grade point (GP) | Performance   |
|------|--------|--------------|------------------|---------------|
| 1    | 90-100 | O            | 10               | Outstanding   |
| 2    | 80-89  | A+           | 9                | Excellent     |
| 3    | 70-79  | A            | 8                | Very Good     |
| 4    | 60-69  | B+           | 7                | Good          |
| 5    | 50-59  | B            | 6                | Above Average |
| 6    | 40-49  | C            | 5                | Pass          |
| 7    | 0-39   | RA           | -                | Reappear      |
| 8    | 0      | AA           | -                | Absent        |

➤ **Cumulative Grade Point Average (CGPA)**

$$CGPA = \frac{\sum (GP \times C)}{\sum C}$$

- **GP** = Grade point, **C** = Credit
- CGPA is calculated only for Part-III courses
- CGPA for a semester is awarded on cumulative basis

➤ **Classification**

- First Class with Distinction :  $CGPA \geq 7.5^*$
- First Class :  $CGPA \geq 6.0$
- Second Class :  $CGPA \geq 5.0$  and  $< 6.0$
- Third Class :  $CGPA < 5.0$



## Part I TAMIL

### தமிழக வரலாறும் பண்பாடும்

#### அலகு 1

**தொழில் பழங்கால வரலாறும் சங்ககால வரலாறும்**

1. தொழில் தமிழர்
2. பழைய கற்காலம்
3. புதிய கற்காலம்
4. உலோகக் காலம்
5. அகழ்வாராய்ச்சியில் தமிழும் தமிழரும் (கீழடி வரை)
6. திணை வாழ்வியல் (களவு வாழ்க்கை, கற்பு வாழ்க்கை, உணவு, அணிகலன்கள், வாணிகம், விளையாட்டுகள்)
7. கல்வியும் கலைகளும்
8. தமிழ் வளர்த்த சங்கம்
9. சங்க கால ஆட்சி முறை
10. அயல்நாட்டுத் தொடர்புகள்

#### அலகு 2

**ஆட்சியர் வரலாறு**

1. மூவேந்தர் வரலாறு
2. பல்லவர் வரலாறு
3. நாயக்கர் ஆட்சி
4. முகம்மதியர் ஆட்சி
5. மராட்டியர் ஆட்சி

#### அலகு 3

**ஐரோப்பியர் கால வரலாறு**

1. போர்த்துகீசியர்
2. டச்சுக்காரர்கள்
3. டேனிஸ்கரர்கள்
4. பிரெஞ்சுக்காரர்கள்
5. ஆங்கிலேயர்கள்
6. பாளையக்காரர்கள்
7. இந்தியா விடுதலை போராட்டத்தில் தமிழ்நாடு

#### அலகு 4

**விடுதலைக்கிபின் தமிழ்நாட்டு வரலாறு**

1. மொழிபோராட்டம்



2. சமூக மறுமலர்ச்சி
3. தொழில்நுட்ப வளர்ச்சி

#### அலகு 5

##### மொழிப்பயிற்சி

1. நிறுத்தக் குறிகள்
2. கலைச்சொற்கள்
3. மொழிபெயர்ப்பு

#### Text Books

- தமிழக வரலாறும் பண்பாடும் - கே. கே. பிள்ளை, உலகத் தமிழாராய்ச்சி நிறுவனம், சென்னை
- தமிழர் நாகரீகம் பண்பாடும் - அ. தட்சிணாமூர்த்தி, யாழ் வெளியீடு, சென்னை
- தமிழக வரலாறும் பண்பாடும்-வே.தி.செல்லம், மணிவாசகர் பதிப்பகம், சென்னை

#### Reference Books

1. தமிழக சமுதாயா பண்பாட்டு கலை வரலாறு - கு சேதுராமன், என்,சி,பி.எச், சென்னை
2. தமிழர் கலையும் பண்பாடும்-அ .கா.பெருமாள், என்,சி,பி.எச், சென்னை
3. ஒரு பண்பாட்டின் பயணம்: சிந்து முதல் வைகை வரை - ஆர். பாலகிருஷ்ணன், ரோஜா முத்தையா ஆராய்ச்சி நூலகம், சென்னை.



# MALAYALAM - POETRY

## UNIT I

This unit focus on significance of Malayalam Poetry and trends.

To familiarize the early stages of Malayalam poetry- Folklore heritage-Pattu-Bhakthi movement- Cherussery-Ezhutachan- Kunjan Nambiar-

Detailed study:

Jaritha Vilapam (Mahabharatam kilippattu) Ezhutachan

## UNIT II

Romanticism –Asan- Ulloor – Vallathol

Detailed study :

1. Veena Poovu (First 7 slokas only)- Asan
2. Aa poomala- Changampuzha

## UNIT III

Modernity in Malayalam poetry- First phase

Post Independent India and Modernization of Nation in Malayalam poetry

Detailed study

1. Yuga Parivarthanam- Vailoppilli Sreedhara Menon
2. Gandhiyum Godseyum- N .V.Krishna Warriar

## UNIT IV

Modernity in Malayalam poetry- second phase

Detailed Study

1. Gajendra moksham \_ Sugathakumari
2. Kozhi – Kadammanitta
3. Megharoopan – Aattoor Ravi Varma
4. Budhanum Attin kuttiyum – A. Ayyappan

## UNIT V

This unit introduces the nature of samakalika kavitha It also evaluates s a m a k a l i k a kavitha,- the contemporary poetry originated after modern poetry- women, Dalit, environment and cyber issues.

Detailed study

- 1.Pattanbipuzhamanalil – P P Ramachandran
- 2.Malayalakavithakku oru Kathu- S. Joseph
- 3.Thoramazha – Rafeek Ahammad
- 4.Muttamadikkumbol – Anitha Thampi
- 5.Survey of India-B.M.Manoj

## Recommended Text

Puthukavitha Ed by Dr.O.K.Santhosh.Madras University Publication (5 poems only )

- (a) pattambipuzhamanalil,
- (b) Malayala kavithakku oru kathu,
- (c) Muttamadikkumbol,
- (d) Thoramazha,
- (e) Survey of India

## Reading List (Print and Online)

1. Aadhunika Malayala Sahitya Charithram prasthanangaliloode – Dr. K.M.George (Ed.)
2. Kairaliyute Kadha – N.Krishnapillai
3. Kavitha Sahitya Charithram – M.Leelavathi
4. Adrushyathayute Akhyanangal- Rajesh Chirapadu
5. Adhunikananthara Malayala Kavitha –C.R.Prasad
6. Pen kavitha malayalathil-Sheeba Divakaran,kerala bhasha institute.Thiruvananthapuram
7. Samakalika Malayala kavitha-M.B.Manoj,Samayam Classics. Kanoor
8. Varnnaraji Dr.M.Leelavathi



## **HINDI - Patra Lekhan aur Paribhashik Shabdawali**

### **Unit I**

#### **Niji Patra Lekhan**

- Niji Patra – Arth aur Bhed
- Pitaji/Mataji ke naam patra
- Mitra, Bhai aadi ke naam patra
- Paribhashik Shabdawali – 20 words

### **Unit II**

#### **Samajik Patra Lekhan**

- Samajik Patra – Arth aur Bhed
- Aavedan Patra – Noukri, Chutti aadi
- Dak Adhikari ke naam patra
- Paribhashik shabdawali – 20 words

### **Unit III**

#### **Vyavasayik Patra Lekhan**

- Vyavasayik Patra – Arth aur Bhed
- Prakashak ke naam patra
- Shikayathi
- Paribhashik shabdawali – 20 words

### **Unit IV**

- Samanya Parichay
- Sarkari Patra
- Ardh-Sarkari Patra
- Gyapan, Paripatra
- Anusmarak
- Paribhashik Shabdawali – 20 words

### **Unit V**

- Precis Writing And Applied Grammar (Ling, Vachan and Karak)

### **Reference Books**

1. Viyavaharik Hindi, Hindi Prachar press, T.Nagar, Madras-600 017
2. Alekhan aur Tippan – Prof. Viraj
3. Alekhan - Kichlu

### **Related Online Contents** (MOOCs, SWAYAM, NPTEL, YouTube, Websites, etc.)

1. <https://youtu.be/-kUPGG0B4tU>
2. <https://www.youtube.com/watch?v=xk14MNb1r7k>



# GENERAL ENGLISH

## Unit I ACTIVE LISTENING

### Short Story

- 1.1 In a Grove – Akutagawa Ryunosuke Translated from Japanese by Takashi Kojima
- 1.2 The Gift of the Magi – O' Henry

### Prose

- 1.3 Listening – Robin Sharma
- 1.4 Nobel Prize Acceptance Speech – WangariMaathai

## Unit II INTERPERSONAL RELATIONSHIPS

### Prose

- 2.1 Telephone Conversation – Wole Soyinka
- 2.2 Of Friendship – Francis Bacon Song on (Motivational/ Narrative)
- 2.3 Ulysses – Alfred Lord Tennyson
- 2.4 And Still I Rise – Maya Angelou

## Unit III COPING WITH STRESS

### Poem

- 3.1 Leisure – W.H. Davies
- 3.2 Anxiety Monster – RhonaMcFerran

### Readers Theatre

- 3.3 The Forty Fortunes: A Tale of Iran
- 3.4 Where there is a Will – Mahesh Dattani

## Unit IV Grammar

- 4.1 Phrasal Verbs & Idioms
- 4.2 Modals and Auxiliaries
- 4.3 Verb Phrases – Gerund, Participle, Infinitive

## Unit V Composition/ Writing Skills

- 5.1 Official Correspondence – Leave Letter, Letter of Application, Permission Letter
- 5.2 Drafting Invitations
- 5.3 Brochures for Programmes and Events

### Text Books (Latest Editions)

1. Wangari Maathai – Nobel Lecture. Nobel Prize Outreach AB 2023. Jul 2023.
2. Mahesh Dattani, Where there is a Will. Penguin, 2013.
3. Martin Hewings, Advanced English Grammar, Cambridge University Press, 2000
4. Essential English Grammar by Raymond Murphy

### Web Resources

1. WangariMaathai – Nobel Lecture. Nobel Prize Outreach AB 2023. Mon. 17 Jul 2023.  
<https://www.nobelprize.org/prizes/peace/2004/maathai/lecture/>
2. Telephone Conversation - Wole Soyinka [https://www.k-state.edu/english/westmank/spring\\_00/SOYINKA.html](https://www.k-state.edu/english/westmank/spring_00/SOYINKA.html)
3. Anxiety Monster-RhonaMcFerran [www.poetrysoup.com](http://www.poetrysoup.com)



## **SPORTS PSYCHOLOGY & SOCIOLOGY**

### **Learning outcomes:**

- Orient the student in basic concepts of psychology.
- Identify the factors determining one's overall personality.
- Understand various laws of learning and their relevance in teaching and learning process.
- Study about the concept of Sports Sociology.

### **Unit-I**

Meaning and Definition of Psychology and sports Psychology–Development of sports Psychology in India – Need and importance of sports Psychology in the field Physical Education and sports.

### **Unit-II**

Definition Motor Learning – Physical and Motor considerations – Body Build, Height and Weight, Strength, Muscular, Endurance, Flexibility, Balance Co-Ordination, Reaction time, Movement time and Reflex time Cognitive–Affective–Psychomotor

### **Unit-III**

Definition of Perception – Theory of Perception Gestalt Theory, Piaget Theory and within's Theory emotional effects tension, anxiety and stress–its role in Physical education and sports.

### **Unit-IV**

Personality traits of sports person–composition of personality–Aggression–theories of Aggression–Psycho-regulative procedures. Autogenic training, yoga and Music's.

### **Unit-V**

Meaning, Nature and Scope of Sociology in Physical education and sports –social factors in sports–Leadership in sports spectators and fans group cohesion social Integration.

### **Book for References:**

1. Alderman A.B. Psychology Behavior in sports W.B. Saunders company Saunders 1974. PuniA.T. Sports Psychology Chandigarh NIS.
2. Alderman Psychology Behavior
3. CrattyB.J. Psychology and Physical activity. Singer R.N. Coaching, Athletics and Physiology.





## **SPORTS BIOMECHANICS & KINESIOLOGY**

### **Learning outcomes:**

- The student would be Oriented with the skeletal structure of human body by identifying the origin and insertion of various muscles.
- Orient the students in basic structure and functions of primary joints of the body.
- Relate and interpret the role of various mechanical principles in human movement.

### **Unit-I**

Meaning and Definition–aim, Need and Importance of Bio-Mechanics in the field of Physical education and sports–Types of motion-linear and angular motion–Function – air and Water resistance.

### **Unit-II**

Linear Kinematics – Distance and Displacement, Speed, Velocity and Acceleration and Projectile–Angular Kinematics–Angular distance and Displacement, Angular speed, Velocity and acceleration.

### **Unit-III**

Center of Gravity Equilibrium – Stages of equilibrium – Factors affecting – equilibrium. Centrifugal and Centripetal, Force-Direction-angle, Point of application – Lever–Principles and its types-Mechanical Advantage–Application of Levers in Physical Education & Sports.

### **Unit-IV**

Inertia-Mass and Weight–Force-Factors affecting force-Types of force– Work, Power and Energy-Impact and Elasticity–Newton's Law of motion.

### **Unit-V**

Use of the above scientific principles in: Track& Field events–Running, throwing, Jumping–Basketball, football, Volleyball.

### **Book for References:**

1. Greiremillor,Paul&smith,TechniquesfortheanalysisofHumanmovementlapsebooksLondon 1975.
2. BunnJohnW“Scientific Principles of coaching”.
3. Charles“Fundamental of Sports Bio-Mechanics Techniques .Hay,JamesG“The Biomechanics of Sports”.
4. T.McClurg Anderson Bio Mechanics of Human Motion.



## **PRACTICAL– VI: TEACHING PRACTICE**

### **Learning outcomes:**

- To help the understand varied responsibilities of a teacher.
- To understand the concept of teaching styles, methods,& approaches and to blend them judiciously in the teaching.
- To help the understand methods of communication &its effective use in the teaching process.
- To help the understand the importance &steps of planning. General lesson Plan and Particular Lesson Plan.

### **Unit-I**

#### **Assembly and roll call**

Class handling

Assembly and disposal

Marchpast

### **Unit-II**

#### **Callisthenic Exercises (Free arm Exercises)**

Standing exercises

Bending exercises

Stepping exercises

Moving exercises

Lunging exercises

Clapping exercises

### **Unit-III**

#### **Exercise with Equipment's**

Dumb bells

Indian clups

Vands

Scoop

Ploe drill

### **Unit-IV**

#### **Exercise without Equipment's**

Baithaks

Dhands

Minor game

### **Unit-V**

#### **Teaching skills on major games and athletic events**

Demonstration

Teaching

Correcting the mistakes

Leadup activities



**Book for References:**

1. Athicha, P., (2007). Methods in Physical Education. Chennai: South Indian Publication.
2. Verma ,H., (2012). Methods and Management of Physical Education (1st Ed.,). Chennai: Sports Publications.
3. Perinbaraj, B., (2013). Methods in Physical Education. Karaikudi: Vinci Agencies.
4. Mojumdar, & Mohum, R., (2009). Methods in Physical Education. New Delhi: Sports Publications.
5. Gopalakrishnan, R. W., (2012). Teaching Methods of Physical Education. New Delhi: Sports Publications.
6. Arumugam, S., (2018). Physical Education: Organization and Administration Methods. Madurai: Shanlax Publications.
7. Karikalan, I., & Alex, T. A., (2014). Fixtures for Tournaments. Tuticorin: Shree Publications
8. Karikalan, I., (2017). Organization, Administration and Methods in Physical Education. Tuticorin: Shree Publications

**APPLIED SPORTS PSYCHOLOGY AND SOCIOLOGY****Unit-I**

Mindfulness, Stress & Anxiety Relaxation Methods Relaxation Technique : Autogenic training, Meditation , Self Bio-feedback , Deep Breathing Technique : Sitali Pranayama , Nadi Shadhana Pranayama, Surya Bhedana Pranayama, Chndara Bhedana Pranayama, Media Techniques : Visualization , Music Play

**Unit-II**

Motor – Learning Object Memory Test (COMT), Motor Leraning Height Assessment, Weight Assessment, Reaction time: Yard stick catch test & Respond Sound reaction test, Balance: Single leg Standing test ,

**Unit-III**

Anxiety : Sports Competition anxiety test (SCAT) , Sports Anxiety Scale test ( SAS Smith et.al2006), Likert Scale 5 point test, Perceived Stress Questionnaire (PSQ) , Perceived Stress Scale (PSS-10), Stress & Anxiety Telaxation Technique: Shavasana, Minor games , Breathing exercise , Inter – Sports game activates

**Unit-IV**

Meditation: Yoga , Concentration Exercise Aggression : Buss-Perry Aggression Questionnaire (BPAQ), Body Classification Assessment - BMI Technique, Observation Technique : Mesomorph, Ectomorph & Endomorph



**Unit -V**

Specimen Identification: Motivation : Rewards , Sports Awards: Major Dhyan Chand Khel Ratna Award, Arjuna Award, Dronacharya Award, Gold Medal, Silver Medal, Bronze Medal, Major Dhyan Chand Award, Rashtriya Khel Protsahan Puraskar, Apparatus : Electronic Depth Perception Apparatus , Bassin Anticipation Timer , GSR Biofeedback Biotrainer, Pulse Biofeedback Biotrainer,

**Books for References:**

1. Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the United States. In S. Spacapan & S. Oskamp (Eds.), *The social psychology of health: Claremont Symposium on applied social psychology*. Newbury Park, CA: Sage.
2. Van Reeth, O., Weibel, L., Spiegel, K., Leproult, R., Dugovic, C., & Maccari, S. (2000). Interactions between stress and sleep: from basic research to clinical situations. *Sleep Medicine Reviews*, 4 (2), 201–219
3. Levenstein, S., Prantera, C., Varvo, V., Scribano, M. L., Berto, E., Luzi, C., & Andreoli, A. (1993). Development of the perceived stress questionnaire: a new tool for psychosomatic research. *Journal of Psychosomatic Research*, 37 (1), 19–32.
4. Öhman, L., Bergdahl, J., Nyberg, L., & Nilsson, L. G. (2007). Longitudinal analysis of the relation between moderate long-term stress and health. *Stress and Health*, 23 (2), 131–138.
5. <https://www.topendsports.com/health/tests/stress.htm>
6. Alderman Psychology Behavior
7. Cratty B.J. Psychology and Physical activity.

**NAAN MUDHALVAN/ FITNESS AND WELLNESS****Learning outcomes:**

- Understand the essentials of life long wellness
- Understand the essentials of Physical fitness
- Overcome fitness barriers and involve in physical activity
- Know the procedure to assess the fitness

**Unit-I**

Definition, Meaning, Concept of Fitness and Wellness–Need for and importance of Fitness and Wellness.

**Unit-II**

Aging–Factors influence Aging–Healthy aging–Wellness–Sports as a hobby and Stress management through exercise.

**Unit-III**

Physical fitness–Physiological fitness–Functional fitness–Mental fitness–Social Fitness



**Unit-IV**

Obesity-Causes of Obesity-Weight Management–Diabetes–causes of diabetes

**Unit-V**

Teaching skills on major games and athletic events Test for Endurance, Strength, Flexibility and Speed (Only one test from each category)

Book for References:

1. Hoeger, Werner, W.K., & Hoeger, Sharon, A. (1990). Fitness and Wellness. Englewood: Morton publishing Company.
2. Hazedine, (1985). Fitness for Sports. Ramsburg: The Crowood Press Ltd.
3. James & Hart, L., (1983). 100% Fitness, New Delhi: Goodwill Publishing House.
4. Anspaugh, D.J., Hamrick, M.H., & Rosato, F.D. (1991). Wellness: Concepts and applications. New York: McGraw-Hill.
5. Arumugam, S., & Sivagnanam, P. (2019). Fitness and Wellness. Madurai: Shanlax Publications.

## ENVIRONMENTAL STUDIES

**Course Objectives:**

The main objectives of this course are:

- Enable the students to be aware of our natural resources, ecosystems and their linkages to society, livelihood, environment and conservation.

**Unit I****Multidisciplinary Nature of Environmental Studies and Natural Resources:**

Concept of Renewable and non-renewable resource, Natural resources and associated problems: Forest resources: Deforestation, Timber extraction, mining, dams and their effects. Water resources: Over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources. Land resources: Land degradation, man induced landslides, soil erosion and desertification.

**UNIT II**

**Ecosystem:** Concept of an Ecosystem, Structure and Functions of Ecosystem, Energy flow in the Ecosystem; Ecological Succession, Food Chains, Food webs and Ecological Pyramids, Characteristic Features of the following Ecosystem: Forest Ecosystem, Grassland Ecosystem and Desert Ecosystem, Aquatic Ecosystem (Ponds, Streams, Lakes, Rivers and Ocean Estuaries)

**UNIT III**

**Biodiversity and its Conservation:** Definition, levels and values of biodiversity; Threats to biodiversity- habitat loss, poaching of wildlife, man-wildlife conflicts, IUCN categories of threat; Terrestrial and marine hotspots of biodiversity in India;



Conservation of Biodiversity - In-situ and Ex-situ conservation; Conservation schemes :Gir lion sanctuary project, Project tiger, Project elephant, Conservation of sea turtles in India. Ecotourism

#### UNIT IV

**Environment Pollution:** Types, causes, effects, and control - Air, Water, Soil and Noise pollution. Nuclear hazards and human health risks. Solid waste management: Control measure of urban and industrial waste. Climate change global warming, ozone layer depletion, acid rain, and impacts on human communities and agriculture

#### UNIT V

**Social Issues and the Environment:** Sustainable Development, Water Conservation, Resettlement and rehabilitation of people. Disaster Management: Floods, earthquake, cyclone and landslides. Consumerism and waste products; Environment Protection Act; Air and water (Prevention and control of Pollution) Act; Wild life protection Act; Forest conservation Act; Environmental movements (Chipko, Silent valley, Bishnois of Rajasthan). Environmental ethics. Environmental communication and public awareness.

#### Reading list

1. Erach Bharucha, 2021, Textbook of Environmental Studies for Undergraduate Courses, Third Edition, Orient blackswan Pvt. Ltd., Hyderabad.
2. V.K. Ahluwalia, Environmental Studies (Second Edition), Ane books India, T-Nagar, Chennai.
3. Y.K. Singh, 2006, Environmental science, New Age International (P) Ltd., Publishers, New Delhi.
4. S. P. Misra, 2023, Essential Environmental Studies, 4th Edn, Ane Books Pvt. Ltd., New Delhi.
5. G.S. Vijayalakshmi, A.G.Murugesan and N.Sukumaran, 2006, Basics of Environmental Science, Manonmaniam Sundaranar University Publications, Tirunelveli.

#### Recommended texts

1. N.Arumugam and V. Kumaresan, 2014, Environmental studies, 4th edition, Saras Publication, Nagercoil, TamilNadu.
2. M.Basu, and S. Xavier, 2016, Fundamentals of Environmental Studies, Cambridge University Press.
3. A.K. Mitra and R. Chakraborty, 2016, Introduction to Environmental Studies, Book Syndicate.
4. J.S. Singh, S.P.Singh, and S.R. Gupta, 2014, Ecology, Environmental Science and Conservation. S. Chand Publishing, New Delhi.

