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27/11/1928

SNJB (Jain Gurukul's)

K.K.H. Abad Arts, S.M.G. Lodha Commerce & S.P.H. Jain Science College
Neminagar, Chandwad-423101, Dist.-Nashik, Maharashtra

(Affiliated to Savitribai Phule Pune University) Id. No.PU/NS/AC/015/1970

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DST-FIST Funded (2018-19)

UGC-NSQF Courses (B.Voc. & CC)

Best College Award by Savitribai Phule Pune University (2015-16)

1.3.1: Institution integrates cross- cutting issues relevant to Gender, Environment and Sustainability, Human Values and Professional Ethics into the Curriculum.

List and syllabi of courses which integrates cross-cutting issues

Sr.No.	Programme Name	Course Name	Page No.
1	F.Y.B.A.	Matrupanchak	03
2	M.A. II Marathi	Sahitya samisha v sanshodhan	05
3	T.Y.B.A. Politics	Political Ideologies	08
4	M.A. I History	Nature of Dalit Movement in Maharashtra	10
5	M.A. I History	Socio Economic History of the Marathas	11
6	F.Y.B.A.	Chhatrapati Shivaji and his times	12
7	S.Y.B.A (History)	Ancient India	13
8	T.Y.B.A.	History of the world in 20 th century (1914-1992)	15
9	M.A. English	Literary Criticism and Theory	16
10	S.Y.B.Com/S.Y.B.Sc./S.Y.B.A (Compulsory)	Environmental awareness	17
11	T.Y. B.Sc. Zoology	Environmental Biology & Toxicology	19
12	M.Sc.Botany I	Plant Ecology & Phytogeography	21
13	T.Y.B.A. Geography	Human Geography ,	23

		Agricultural Geography	
14	T.Y.B.Sc. Botany	Plant Ecology and Biodiversity	28
15	M.Sc. II Botany	Industrial Botany II	30
16	T.Y.B.Sc. Physics	Renewable Energy Sources	33
17	M.Sc. I Physics	Energy Studies I	36
18	M.Sc. I chemistry	Safety in Chemical laboratories and Good Laboratory practices	40
19	T.Y. B.Sc. Chemistry	Environmental and Green Chemistry	42
20	T.Y. B.Sc. Chemistry	Environmental and Green Chemistry	42
21	F.Y.B.A. Politics	Indian Government and Politics	43
22	T.Y.B.A. Politics	International politics	48
23	S.Y.B.A.	Western Political Thought	51
24	S.Y.B.A.	Government and politics of U.K. , U.S.A.	53
25	All P.G. Programs	Human Rights-Paper I and II	55
26	All P.G. Programs	Cyber Security and Cyber Crime	65
27	T.Y.B.A.	Terrorism	70
28	M.A. Marathi	Gramin and Dalit Sahitya	71

पुणे विद्यापीठ

विषय : मराठी - पुनरीक्षित अभ्यासक्रम , जून २०१३ पासून पुढे

प्रथम वर्ष कला - सामान्यस्तर अभ्यासपत्रिका क्रमांक - १ (1024)

• अभ्यासक्रमाची उद्दिष्टे-

- १ सामान्य स्तर बी. ए. १, २ आणि ३ पर्यंतच्या सामान्य स्तरावरील मराठी या विषयाचा अभ्यास करणा-या विद्यार्थ्यांस स्थूलपणे मराठी साहित्य, मराठी भाषा आणि मराठी संस्कृती यांचा क्रमशः परिचय करून देणे.
- २ साहित्यासंबंधी - विशेषतः मराठी साहित्यासंबंधी रुची निर्माण करणे.
- ३ विद्यार्थ्यांच्या वाङ्मयीन अभिरुचीचा विकास करणे.
- ४ आस्वाद घेण्याची डोळस क्षमता विकसित करणे.
- ५ साहित्याभ्यासातून जीवनविषयक समज विकसित करणे.
- ६ मराठी साहित्यातील भिन्न भिन्न प्रवाह आणि प्रकार लक्षात घेणे.
- ७ जागतिकीकरणात विविध क्षेत्रांना सामोरे जाण्यासाठी भाषिक क्षमता विकसित करणे.
- ८ व्यक्तिमत्त्व विकासात भाषेचे महत्त्व स्पष्ट करणे.



• सत्र पहिले

कथासंग्रह/कादंबरी/नाटक/ललितगद्य यापैकी एक पुस्तक आणि उपयोजित मराठी	६० गुण
घटक १ - नेमलेला कथासंग्रह 'मराठी विनोदी कथा' - संपादक डॉ. द. ता. भोसले	४० गुण
घटक-२ - व्यावहारिक आणि उपयोजित मराठी अ - व्यक्तिमत्त्व विकास आणि भाषा, व्यक्तिमत्त्व विकासात भाषेचे स्थान	०४ गुण



- ब - भाषिक कौशल्ये- श्रवण कौशल्य, संभाषण कौशल्य
वाचन कौशल्य, भाषण कौशल्य, लेखन कौशल्य ०८ गुण
- क - कार्यक्रम संयोजन कौशल्ये- ०८ गुण
सूत्रसंचालन, प्रास्ताविक, परिचय, स्वागत-सत्कार,
मनोगत, आभार इत्यादी.



- सत्र दुसरे ८० गुण
- घटक - ४ नेमलेला कविता संग्रह 'मातृपंचक' ३० गुण
- संपादक डॉ. स्नेहल तावरे, डॉ. वेदश्री थिंगळे
- घटक - ५ अ. वर्तमानपत्रासाठी बातमी लेखन ५ गुण
ब. दृक-श्राव्य माध्यमांसाठी(आकाशवाणी व दूरदर्शन) मुलाखत लेखन ५ गुण
क. प्रशासकीय इंग्लिश पारिभाषिक संज्ञांचे मराठीकरण करणे. ५ गुण
ड. अशुद्ध शब्द शुद्ध स्वरूपात लिहिणे. ५ गुण

- 'मराठी विनोदी कथा' आणि 'मातृपंचक' ही दोन पुस्तके मराठी अभ्यासमंडळाने क्रमिक म्हणून नेमलेली आहेत. दुस-या सत्रात ८० गुणांची विभागणी खालीलप्रमाणे राहिल.

- प्रथम सत्र - मराठी विनोदी कथा - २० गुण
व्यावहारिक आणि उपयोजित मराठी - १० गुण
- द्वितीय सत्र - मातृपंचक - ३० गुण
व्यावहारिक आणि उपयोजित मराठी - २० गुण

एकूण ८० गुण



उद्दिष्टे:-

१. साहित्य, समीक्षाव्यवहाराची समज वाढीस लागणे.
२. समीक्षेची संकल्पना समजाऊन घेणे.
३. समीक्षा व्यवहारातील मूल्यकल्पनांचा परिचय करून घेणे.
४. विविध समीक्षा पद्धतीमागील विचारव्यूह, दृष्टी समजाऊन घेणे.
५. मराठी साहित्य समीक्षकांची परंपरा समजाऊन घेणे.
६. समीक्षा करण्याची दृष्टी व क्षमता विकसित करणे.
७. संशोधनाची संकल्पना, प्रयोजने आणि विविध संशोधन पद्धती समजाऊन घेणे.
८. वाङ्मयीन संशोधनाच्या विविध अभ्यासक्षेत्रांचा परिचय करून घेणे.
९. आंतरविद्यालयीय संशोधनाचे स्वरूप आणि महत्त्व लक्षात घेणे.
१०. मराठी साहित्य संशोधकांची परंपरा समजाऊन घेणे.
११. संशोधन करण्याची दृष्टी व क्षमता विकसित करणे.

तृतीय सत्र

- सत्र परीक्षा (ESE): ५० गुण (चार श्रेयांक)
- सातत्यपूर्ण मूल्यांकन (CA) : ५० गुण (चार श्रेयांक)
- एकूण घड्याळी : ६० तास
- प्रत्येक घटकासाठी १५ तास = एक श्रेयांक

घटक १ : समीक्षेची संकल्पना

- १ समीक्षा संकल्पना आणि स्वरूप
- २ समीक्षेची वैशिष्ट्ये
- ३ समीक्षेचे प्रयोजन



- ४ नाटक वाङ्मयप्रकार- दत्ता भगत, यशवंतराव चव्हाण महाराष्ट्र मुक्त विद्यापीठ, नाशिक
- ५ शाहिरीचे लोकरंग- अंबादास तावर
- ६ भराठी लोककथा- सरोजिनी बाबर
- ७ नाचू कीर्तनाच्या रंगी- यशवंत पाठक
- ८ रंगबाजी- रुम्नुम अचलखांब
- ९ तमाशा: कला आणि जीवन- डॉ. सुनील चंदनशिवे
- १० शाहिरीचे शाहीर : भाऊ फक्कड - प्रा. पांडुरंग ऐतळे

नाट्यसमीक्षेच्या संदर्भातील अधिकारी व्यक्ती

- १ माधव चड्ढे
- २ सुरेशचंद्र पाध्ये
- ३ प्रसन्नकुमार अकलूजकर
- ४ कमलाकर नाडकर्णी
- ५ जयंत पवार
- ६ कमलाकर सांनटवते



४ समीक्षेतील माहित्याचे आकलन, आस्वाद-मूल्यमापन यांचे स्थान व कार्य

घटक २: आदर्श समीक्षकाची साधना आणि समीक्षकाने पाळावयाची पध्दते

- १ आदर्श समीक्षकाचे गुण : गरिबता, प्रज्ञा, तुलनाक्षमता, चिकित्सकता, मूल्यविवेक, विश्लेषकता, व्युत्पन्नता, तुलनाक्षमता, भाषिक तयारी इ.
- २ समीक्षकाने पाळावयाची पध्दते
 - १ समीक्षाविषयाचे अवधान व तारतम्य
 - २ निकषाचे तारतम्य
 - ३ व्यक्तिनिष्ठता व वस्तुनिष्ठता यांचे तारतम्य
 - ४ मांडणी व शैली यांचे तारतम्य
 - ५ संगती व सुसूत्रता यांचे ध्यान
 - ६ नेमकेपणा व तार्किकता या संबंधीचा विवेक
 - ७ चाह्मयीन मूल्ये व जीवनमूल्ये यांचा परस्परसंबंध आणि त्यांच्या वापराबाबत करावयाचा विवेक

घटक ३: समीक्षेच्या पद्धती

- १ आस्वादक समीक्षा
- २ रूपवादी समीक्षा
- ३ चरित्रात्मक समीक्षा
- ४ मानसशास्त्रीय समीक्षा
- ५ आदिबंधात्मक समीक्षा
- ६ ऐतिहासिक समीक्षा
- ७ समाजशास्त्रीय समीक्षा
- ८ भावसर्वादी समीक्षा
- ९ **स्वीवादी समीक्षा**

घटक ४: मराठी समीक्षेची वाटचाल

- १ इ.स. १८७४ ते इ.स. १९२०
- २ इ.स. १९२१ ते इ.स. १९४५



SYLLABUS FOR TYBA POLITICAL SCIENCE (G-3)

POLITICAL IDEALOGIES

Course Rationale:

This paper studies the role of different political ideologies and their impact in politics. Each ideology is critically studied in its historical context. In course of its evolution and development, the different streams and subtle nuances within each ideology, the changes and continuities in its doctrine and its relevance to contemporary times are highlighted. The close link between an idea and its actual realization in public policy needs to be explained as well. The philosophical basis of the ideologies is emphasized with special emphasis on key thinkers and their theoretical formulations. The legacy of all the major ideologies is to be critically assessed.

SECTION-I**UNIT-I: - Ideology**

08

- a) Origin, Meaning, Definition
- b) Nature and Scope

UNIT-II: - Nationalism

14

- a) Meaning, Definitions and Elements
- b) Progressive and Reactionary
- c) Internationalism

UNIT-III: - Democratic Socialism

14

- a) Meaning, Nature and Features
- b) Achievements and Limitations
- c) Types : Fabianism, Syndicalism, Guild Socialism

UNIT-IV: - Fascism

12

- a) Factors responsible for the rise of Fascism
- b) Principles
- c) Corporate State

SECTION-II**UNIT-V: - Marxism**

12

- a) Historical Materialism
- b) Theory of Surplus Value
- c) Marxian State

UNIT-VI: - Phule-Ambekarism

12

- a) Equality
- b) Religion
- c) Democracy



UNIT-VII - Gandhism 12
a) Truth and Non-Violence
b) Theory of Satyagraha
c) Gram Swaraj

UNIT-VIII - Feminism 12
a) Meaning and Nature
b) Liberal Feminism
c) Feminism in India : Caste, Patriarchy, Women's Representation

Readings:

- L. P. Baradat, Political Ideologies: Their Origins and Impact, Englewood Cliffs NJ, Prentice Hall, 1989.
———, The Liberal Tradition in China, Hong Kong and New York, Chinese University of Hong Kong Press, 1983.
D. Bell, The End of Ideology, New York, The Free Press, 1960.
R. N. Berki, Socialism, London, John Dent and Sons, 1975.
Sir I. Berlin, "Nationalism: Past Neglect and Present Power" in H. Hardy (ed.) Against the Current, Oxford, Oxford University Press, 1981.
J. Bondurant, Conquest of Violence: the Gandhian Philosophy of Conflict, Berkeley, University of California Press, 1965.
R. M. Christenson, et al., Ideologies and Modern Politics, London, Thomas Nelson and Sons, 1971.
P. Gay, The Dilemma of Democratic Socialism: Eduard Bernstein's challenge to Marx, New York, Columbia University Press, 1952.
E. Gellner, Nations and Nationalism, Oxford, Blackwell, 1983. Political Science 76 J. Gray, Liberalism, Minneapolis, University of Minnesota Press, 1986.
J. Gray, Liberalisms: Essays in Political Philosophy, London, Routledge, 1989.
D. Ingersoll and R.K. Mathews, The Philosophic Roots of Modern Ideologies: Liberalism, Communism and Fascism, Englewood Cliffs NJ, Prentice Hall, 1991.
R. N. Iyer, The Moral and Political Thought of Mahatma Gandhi, New York, Oxford University Press, 1973.
M. Kitchen, Fascism, London, Dent, 1979.
D. J. Manning, Liberalism, London, John Dent and Sons, 1976.
H. C. Mansfield, The Spirit of Liberalism, Cambridge, Harvard University Press. Political Science 77
D. McLellan, Marxism after Marx, London, Macmillan, 1975.
———, On Nationality, Oxford, The Clarendon Press, 1995.
Dr. Lodhi Kaniz Fatma Niyaz Ahmed, Modern Political Ideologies, Success Publication, Pune, 2015.
Dr. Benke Suvarna, Political Theory (Marathi), Peasant Publication, Jalgaon, 2014.
Dr. Chavan Shankar, Modern Political Ideology (Marathi), Pratima Prakashan, Pune.
Dr. Devare P.D., & Dr. D.S. Nikumbh, Modern Political Ideologies (Marathi), Prashant Publication, Jalgaon, 2008.
Dr. Date Sunil & Dr. Dhobale Ramesh, Political Ideologies (Marathi), Vidya Book Publishers, Aurangabad, 2009.
Dr. Rathi Shubhangi, Modern Political Ideologies (Marathi), Atharva Publication, Jalgaon, 2014.
Kulkarni A.N., Modern Political Ideologies, Vidya Prakashan Nagpur, 2014

OR



MA-I (Sem-II)

Semester II: Optional Paper No. 8

Credits: 4

Course Title: Nature of Dalit Movement in Maharashtra

Objectives

The paper intends to provide an understanding of the changing position of Dalit at conceptual and practical level of social transformation, from 19th century till today. This paper also lays emphasis on Ambedkarian Movement, which marks an evolutionary phase in Dalit emancipation. It highlights the constitutional rights for safeguarding the interests of the oppressed. It takes into account Dalit literature, which provides space for understanding of Dalit consciousness and adds new dimensions in understanding 'Dalit'.

Course content

1. Dr. Babasaheb Ambedkar's Ideology
 - a) Social
 - b) Economic
 - c) Political
 - d) Religious
2. Dr. Babasaheb Ambedkar's Movement
 - a) Bahishkrit Hitakarni Sabha
 - b) Mahad Satyagraha
 - c) Simon Commission
 - d) Round Table Conference and Poona Pact
 - e) Kalaram Mandir Satyagraha
 - f) Independent Labour Party
 - g) All India Scheduled Caste Federation
3. Dr. Babasaheb Ambedkar and Constitution of India
 - a) Role of Dr. Ambedkar in the making of the Indian Constitution
 - b) Safeguards for Lower Castes
 - c) Issue of the Hindu Code Bill
4. Movement of Conversion to Buddhism (1935-1956)
5. Nature of Post-Ambedkarian Movement
6. Dalit Consciousness and other Modes of Expression: a brief review
 - a) Dalit Literature
 - b) Press
 - c) Ambedkari Jalase
 - d) Dalit Rangbhumi

Select Readings



Semester II: Core Paper No. 6

Credits: 4

Course Title: Socio-Economic History of the Marathas

Objectives

The purpose of the course is to study socio-economic history of the Marathas in an analytical way, to acquaint the student with the components of social structure and their functions, to understand the relationship between religion, caste, customs, traditions, class in 17th and 18th century Maratha Society, to enable the student to understand aspects of economic life, to trace the determinants of changes in social and economic life.

Course Content

1. Defining socio-economic history
 - a) Historiography of Socio-economic History.
2. Sources: Perceptions, Limitations, Range
 - a) Literary
 - b) Foreign
 - c) Archival
 - d) Miscellaneous
3. Village community
 - a) Land Tenures
 - b) Residents of the village
 - c) Balutedari system
4. Social institutions ✓
 - a) Varna and caste
 - b) Communities
 - c) Marriage
 - d) Family
5. Social Stratification and mobility
6. Fairs and Festivals
7. Education
 - a) Educational institutions
 - b) Primary education
 - c) Higher education
8. Agrarian System
 - a) Types of land
 - b) Assessment of land
 - c) Methods of land revenue collection



8. Social Life	10
1) Gavghada.	
2) Woman	
1) Religious	
9. Economic Life.	10
1) Agriculture And Revenue System	
2) Sources of income	
3) Trade & Commerce	
4) Currency	
10. Arts & Architecture (Special Ref. to Temples, Gadhi, and Forts)	8

Books for Study

1. M.G. Ranade-Rise of the Maratha Power.
2. G.S. Sardesai-New History of the Marathas, Vols. I, II and III.
3. J.N. Sarkar-Shivaji and His Times.
4. S.N. Sen-Administrative System of the Marathas.
5. S.N. Sen-Military System of the Marathas.
6. Nadkarni R. V. - Rise and fall of the Maratha Empire.
7. Sarkar J.N.-House of Shivaji.
8. Dr. Balkrishna - Shivaji the Great.
9. Pagari Setu Madhavrao - Chh. Shivaji.

मराठी साहित्य

१. अ.ग. कुलकर्णी व ग.ह. खरे (संपा.)-मराठ्यांचा इतिहास, खंड १ व ३.
२. प्रा.प. देशपांडे-मराठी साहित्याचा उदय आणि उत्कर्ष.
३. क.क. भावे-शिवधर्म्य व शिवकाल.
४. वेदे. वा.भी. - शिवाजी महाराजांचे विशिष्टविविधत्वक चरित्र.
५. रामचंद्र गुत अमात्य - आज्ञापत्र



a) Agriculture, Iron Technology, Urbanisation

b) New Religion, sects and its philosophy: Jainism, Buddhism and Charvak Lokayats

Second Term

Unit - 6) The Mauryan Empire	10
a) Rise & Expansion	
b) Administration	
c) Socio- Economic and Religious Life	
d) Decline	
Unit - 7) Satvahans	10
a) Socio- economic condition	
b) Religious	
c) Cultural	
Unit - 8) The Age of Imperial Guptas	10
a) Political backgrounds	
b) Administration	
c) Socio- Economic and Religious Life	
d) Science	
Unit - 9) Harshavardhana and his Achievements	8
Unit - 10) South Indian Dnyansties and their socio-cultural life	12
a) Sangam Age : Brief Survey	
b) Chalukyas	
c) Pallavas	
d) Rashtrakutas	
e) Cholas	



7-2019 till
15-16 to 18-19

Gr 3

T.Y.B.A.

History of the world in 20th century (1914-1992)

FIRST TERM

1. CONCEPTUAL STUDY

(08)

- 1.1 Capitalism
- 1.2 Economic Imperialism
- 1.3 Dictatorship
- 1.4 Communism
- 1.5 Socialism
- 1.6 Nazism
- 1.7 Fascism
- 1.8 Cold War
- 1.9 Non - Alignment
- 1.10 Globalization
- 1.11 Feminism
- 1.12 Humanism

2. FIRST WORLD WAR

(10)

- 2.1 Causes
- 2.2 Impacts / Consequences
- 2.3 Paris Peace settlement (1919)
- 2.4 League of Nations



Unit II: Psychoanalysis and Reader Response Criticism

- i) Feirstein, Frederick: Psychoanalysis and Poetry
- ii) Wolfgang Iser: Interaction between Text and Reader

Unit III: Marxist Criticism, Cultural Studies and Digital Humanities

- i) Terry Eagleton: *Marxism and Literary Criticism* (Chapters 1&2)
- ii) Stuart Hall: Cultural Identity and Diaspora.
- iii) Stuart Moulthrop: You Say You Want a Revolution? Hypertext and the Laws of Media

Unit IV: Feminist Criticism and Postcolonialism

- i) Simone de Beauvoir: *Woman's Situation and Character, Chapter 6 (from The Second Sex)*
- ii) Gauri Viswanathan: The Beginnings of English Literary Study in British India

(IV) Suggestions for Teachers

The course content tries to cover major critical approaches from the ancient to the poststructural period. It is therefore advisable that teachers introduce the characteristics and tenets of all major approaches along with the necessity and relevance of their emergence. The broad differences between the traditional and the modern criticism and between criticism and theory should be explained to students. The critical terms generally used as the critical short hands need to be introduced in clear and simple words possible. It is important to explain the relevance of these approaches to the present literature and language study and this can be done by applying the approaches to texts. Teachers should encourage students to take efforts to understand the approaches and apply them to texts of their choice.

(V)References

- Kulkarni Anand and Chaskalov, Chok (2013). *Introduction to Literary Theory and Criticism*. Orient Blackswan.
- Leitch Vincent. B. (ed.) *The Norton Anthology of Theory and Criticism*. W.



A Course in Environmental Awareness

Syllabus

SECTION-I

Sr. No.	Topic	Sub-topics	No. of periods
1.	Nature & Scope of Environmental Studies.	Definition scope, importance, Multi disciplinary nature, Need for public awareness	2
2.	Natural Resources	Renewable & non-renewable Natural resources & associated problems of forest, water, mineral, energy, land & food - case studies, conservation of resources.	7
3.	Eco system	Types, characteristics, structure & function	6
4.	Biodiversity & its conservation	Definition, Genetic species & eco system diversity, Biogeographical classification of India, Biodiversity at global, national & local levels, conservation of biodiversity.	5

SECTION II

5.	Environmental Pollution	Definition course effects & control measures of air, water, soil marine noise, thermal nuclear, Role of an individual in prevention of pollution - case studies. Disaster management.	7
6.	Social Issues & the environment	Urban problems, Resettlement problems, climatic change, global warming acid rain, ozone layer depletion, nuclear accidents, Air act, Environment Protection Act, water, forest wild life act, public awareness.	5
7.	Human Population & environment	Population - explosion, Family Welfare Programme, Environment & Human Health, Human Rights, Value Education, HIV/AIDS, Role of I.T. in Environment & human health - case studies.	4
8.	Fieldwork	Visit to a local area- urban, rural, industrial, agricultural, study of simple eco system-pond, river, hill etc	4

40



List of Reference Books.

1. A text Book of environmental Sciences – S.S. Purohit shammi & A.K. Agarwal
2. The Biodiversity of India- Bharucha Erach
3. Marine Pollution – Clark R.S.
4. Down to Earth, Center for Science & Environment
5. Encyclopedia of Indian Natural History – (B.N.H.S.) Hawkins R.E. Mumbai
6. Environmental Protection & Laws-Jadhav H. & Bosale V.M. (1995) Himalaya Pub. House, Delhi.
7. पर्यावरण शास्त्र – डॉ. धोलप टी. एन.
8. पर्यावरण शास्त्र – डॉ. करमकर, प्रा. पागनीस, देवस्थळी, डोईफोडे.
9. पर्यावरण शास्त्र – डॉ. घारपुरे.
10. पर्यावरण विज्ञान – प्रा. अहिरगवण अलिझाड, वगट, घापटे, भोस.



ZY-334 (Paper IV)

Environmental Biology and Toxicology

Total lectures: 48

- | | |
|--|----|
| 1 Environmental Biology | 2 |
| Introduction- Definition, basic concepts and scope | |
| 2 The Ecosystem | 8 |
| 2.1 Definition, abiotic and biotic components and their interrelationship | |
| 2.2 Energy flow in ecosystem and flow models | |
| 2.3 Major Ecosystems: (a) natural ecosystem: e.g. fresh water, forest (b) artificial ecosystem: e.g. cropland | |
| 2.4 Food chain in ecosystem and food web | |
| 2.5 Ecological pyramids | |
| 3 Environmental Pollution: | 12 |
| 3.1 Definition and types of pollution | |
| 3.2 Pollutants, types of pollutants (metallic, gaseous, acids, alkalis, biocides) | |
| 3.3 Air pollution: Definition, sources of air pollution and their effects | |
| 3.4 Air pollution and its relevance with the following | |
| 3.4.1 Acid rain | |
| 3.4.2 Greenhouse effect | |
| 3.4.3 Ozone layer depletion | |
| 3.5 Water pollution: definition, sources of water pollution and their effects on ecosystem. Community waste with reference to following: | |
| I. Sewage | |
| II. Industrial wastes | |
| III. Agricultural wastes | |
| 3.6 Land / Soil pollution: definition, sources of land / soil pollution and their effects | |
| 3.7 Noise pollution: definition, sources of noise pollution and their effects and control measures | |
| 4 Environment and Development | 5 |
| 4.1 Bioindicators and environmental monitoring | |
| 4.2 Environmental challenges in India: land degradation, population explosion, urbanization and industrialization | |



5	Natural Resources and Conservation:	5
5.1	Renewable and non-renewable resources	
5.2	Soil conservation	
5.3	Forest conservation	
5.4	Energy sources: conventional and non-conventional	
6	Wildlife Management:	5
6.1	Definition, causes of wildlife depletion	
6.2	Importance of wildlife-management in India	
6.3	Endangered species, vulnerable species, rare species and threatened species	
6.4	Wild life conservation	
7	Toxicants and Toxicity:	7
7.1	Definition of toxicology, scope and branches	
7.2	Types of toxicants	
7.3	Factors influencing toxicity (pH, temperature, reproductive status, age, physiological state)	
7.4	Dose, LD ₅₀ , LC ₅₀	
8	Toxicants of Public Health and Hazards:	4
	Pesticides, heavy metals, fertilizers, food additives and radioactive substances	

Reference Books

1. Ecology and environment, 2014, 12th revised Edition, P. D. Sharma, Rastogi Publ. Meerat.
2. Environmental Biology, 1996, P. S. Verma and V. K. Agrawal, S. Chand and Co. New Delhi.
3. Ecology, 2007, 1st Edn. Mohan P. Arora, Himalaya Publ. House, Delhi.
4. Fundamentals of ecology, 2009, 3rd Edn., M. C. Dash, Tata Mcgraw Hill, New Delhi.
5. Elements of ecology, 1967, George L. Clarke, John Wiley and Sons, New York.
6. Ecology of Natural resources, 1985, Francois Ramade, W. J. Duffin, John Wiley and Sons, New York.
7. Concepts of Ecology, 1996, E.J. Kormondy, Prentice Hall of India. New Delhi
8. Modern concept of Ecology, 1995, 8thEdn. H. D. Kumar, Vikas Publishing House, New Delhi



3/2/20

BO 2.4 PLANT ECOLOGY AND PHYTOGEOGRAPHY (4 Credits)

(60 Lectures)

Credit 1 = (15 Lectures)

Plant relation with the environment

15L

1. Plant relation with the climatic factors: water, precipitation, temperature, light and radiation 4L
2. Plant relation with the edaphic factors: types of soil, soil moisture and water holding capacity of the soil, soil nutrients, soil microbes 4L
3. Plant distribution with respect to topographic and climatic factors, centres of origin, migration 4L
4. Environmental pollution and its impact – Air, water, soil and noise 3L

Credit 2 = (15 Lectures)

Population Ecology

15L

1. Ecological limits and the size of population, factors affecting population size, demes 3L
2. Life history strategies, r and k selection, C-S-R triangle 3L
3. Concept of metapopulation, extinction events, population viability analysis 3L
4. Community structure and species diversity 3L
5. Diversity types and levels (alpha, beta, gamma), ecotone and edge effect 3L

Credit 3 = (15 Lectures)

Ecosystems

15L

1. Ecosystem: Components and organization 1L
2. Energy flow and mineral cycling, carbon sequestration 2L
3. Ecosystem types 4L
 Terrestrial: Forests, grasslands and deserts
 Aquatic: Fresh water and marine
 Artificial: Agricultural
4. Eco-physiology: Adaptive responses of plants to variation in: 4L
 Light: Photoinhibition, protection against light-induced damage
 Temperature: Winter hardness, vernalization, adaptation to high temperature
 Water availability: Adaptation to light drought and flooding
 Plant succession: Autogenic and allogenic, mechanism and phases



5. Cerial communities and climax communities: Hydroseres, lithoseres, xeroseres, haloseres
4L

Credit 4 = (15 Lectures)

Phytogeography

15L

- | | |
|---|----|
| 1. Introduction, major plant communities of world, phytogeographic regions of world (vegetation of belts), soil, climate, flora and vegetation of India, floristic (Botanical) regions of India | 7L |
| 2. Biomes: Classification and components | 2L |
| 3. Habitat ecology: Fresh water, Marine water, Estuarine ecology, Terrestrial ecology, Dessert ecology | 3L |
| 4. Endemism and EIA | 3L |

REFERENCES:-

1. **Ambhast, R. S.** (1998). A Text Book of Plant Ecology, 9th edition, Friend and Co.
2. **Barbour, M. G., Pits, W. D. and Burk, J. H.** (1967). Terrestrial Plant Ecology, Addison-Wesley Publisher.
3. **Begon, M., Townsend, C. R., Harper, J. L.** (2005). Ecology: From Individuals to Ecosystems, 4th edition, Wiley Blackwell.
4. **Canter, L.** (1996). Environmental Impact Assessment, 2nd edition, McGraw Hill Publishing Company.
5. **Coleman, D. C., Crossley, D. A., Handrix, P. F.** (2004). Fundamentals of Soil Ecology, 2nd edition, Elsevier academic press.
6. **Coller, B. D., Cox, G. W. and Miller, P. C.** (1973). Dynamic Ecology, Prentice-Hall, Inc. Englewood Cliffs, New Jersey.
7. **Crawley, M., Crawley, J. And Crawley, M.** (1997). Plant Ecology, 2nd edition, Wiley Blackwell.
8. **De, A. K.** (1994). Environmental Chemistry, Wiley Eastern publication.
9. **Gurevitch, J., Scheiner, S. M., Fox, G. A.** (2006). The Ecology of Plants, Sinauer Associates.



SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE

Revised Structure of Syllabus for B.A. Geography to be Effective From

F.Y.B.A. – June, 2013

S.Y.B.A. – June, 2014

T.Y.B.A. – June, 2015

F.Y.B.A.	
G-1	Gg-110 Elements of Geomorphology

S.Y.B.A.	
G-2	Gg-210 Elements of Climatology and Oceanography OR
G-2	Gg-210 Geography of Disaster Management
S-1	Gg-220 Economic Geography OR
S-1	Gg-220 Tourism Geography
S-2	Gg-201 Fundamentals of Geographical Analysis

T.Y.B.A.	
G-3	Gg-310 Regional Geography of India OR
G-3	Gg-310 Human Geography
S-3	Gg-320 Agricultural Geography OR
S-3	Gg-320 Population and Settlement Geography
S-4	Gg-301 Techniques of Spatial Analysis



SAVITRIBAI PHULE UNIVERSITY OF PUNE
T.Y.B.A. GEOGRAPHY

Gg-320 – AGRICULTURAL GEOGRAPHY (S-3)

From June – 2015

- Objectives:** 1. To Introduce students Agricultural activities and its relation with Geography.
2. To Familiarize the students with new modern technical methods and their applications in Agricultural activities.
3. To enable students to apply Previously knowledge in Problems and Prospects in agriculture

Section- I

Sr. No.	Topic	Units	Sub Units	Periods
1	Introduction of Agricultural Geography	A. Meaning, Nature & Scope B. Approaches C. Importance D. Trends	Definition, Nature & Scope of Agricultural Geography Approaches 1. Regional approach 2. Systematic approach 3. Commodity approach 4. Recent approaches Importance of Agriculture in Indian Economy Recent Trends in Agriculture Geography	12
2	Determinates of Agriculture	A. Physical Factors B. Economic Factors C. Social Factor D. Technological Factors	1. Relief 2. Climate 3. Soil 1. Capital, 2. Transportation 3. Market, 4. Storage, 5. Export Import 1. Land holding, 2. Land fragmentation 3. Labour, 4. Traditional Methods 5. Farmers view towards agriculture 1. Irrigation 2. Mechanization 3. Manures, Fertilizers 4. Pesticides	15
3	Types of Agriculture	Characteristics of A. Subsistence Agriculture B. Commercial Farming	1. Shifting Cultivation 2. Dry land farming 3. Intensive Subsistent farming 1. Mixed farming 2. Horticulture / Truck farming 3. Community farming	10
4	Problems & Prospects of Agriculture	Problems and Prospects with Indian examples	1. Natural 2. Economical 3. Social 4. Political	08

Section II

5	Role of irrigation in Agricultural Development	A. Need of Irrigation B. Types of Irrigation C. Methods of Irrigation	1. Importan of irrigation 1. Canals 2. Lake 3. Well 4. Borewell & Tube well 1. Flood irrigation 2. Ring & Basin 3. Drip irrigation 4. Sprinkler irrigation	12
6	Dry Land farming And Watershade Management	A. Concept & Need B. Methods of Watershed Management	1. Concept & Need, Dry Land Farming Management in India 2. Concept of Watershed Management Methods : 1. Continuous Contour Tranches (CCT) 2. Gabian Bunds, 3. Nala Bunding 4. Biological Bunds, 5. Kohlapur Type (K.T.) weir	15



			6. Vanrai Bunds, 7. Percolation Tanks 8. Farm Lake / Ponds, 9. Dams, 10. Barrages	
7	Allied Areas in Agriculture & Agriculture Development	Concept of Agricultural Development with new Techniques	1. Dairy farming 2. Poultry 3. Sheep and Goat farming 4. Nursery 5. Api Culture 6. Fish Farming 6. Poly houses 7. Tissue Culture 8. Food & Fruit Processing 9. Agro-Tourism	10
8	Sustainable Agricultural Development and Agriculture in India	A. Ecological Conservation B. Characteristics of Indian agriculture	1. Waste Land Management 2. Organic farming 3. Crop rotation 4. Group Plantation 5. Pest and Weed Management 6. Agro Forestry 1. Green Revolution in India-Problems Associated with Indian Agriculture 2. National Agricultural Policy 3. Various Schemes of Central and State Govt. for Agricultural Development and Farmers	08

Suggested Readings

1. Aher A. B., Salunkhe V. Agriculture Geography, Diamond Publication, Pune (2015)
2. Bayliss Smith, T.P. : The Ecology of Agricultural Systems. Cambridge University Press, London, 1987.
3. Berry, B.J.L. et. al. : The Geography of Economic Systems. Prentice Hall, New York, 1976.
4. Brown, L.R. : The Changing World Food Prospects - The Nineties and Beyond. World Watch Institute, Washington D.C., 1990.
5. Dyson, T. : Population and Food - Global Trends and Future Prospects. Routledge, London, 1996.
6. Gregor, H.P. : Geography of Agriculture. Prentice Hall, New York, 1970.
7. Grigg, D.B. : The Agricultural Systems of the World. Cambridge University Press, New York 1974.
8. Hartshorn, T.N. and Alexander, J.W. : Economic Geography. Prentice Hall, New Delhi, 1988
9. Mannion, A.M. : Agriculture and Environment Change. John Wiley, London, 1995.
10. Morgan W.B. and Norton, R.J.C. : Agricultural Geography. Methuen, London, 1971.
11. Morgan, W.B. : Agriculture in the Third World - A Spatial Analysis. Westview Press, Boulder, 1978.
12. Sauer, C.O. : Agricultural Origins and Dispersals. M.I.T. Press, Mass, U.S.A., 1969.
13. Singh, J. and Dhillon, S.S. : Agricultural Geography, Tata McGraw Hill Pub., New
14. Singh, J. and Dhillon, S.S. (1988), "Agricultural Geography", 2nd edition, Tata McGraw-Hill, New Delhi
15. Wigley, G.(1981), Tropical Agriculture: The Development of Production, 4th edition, Arnold, London
16. Saptarshi P.G., More J.C., Ugale V.R., Musmade A.H.(2009), "India A Geographical Analysis" Diamond, Pune.
17. Patil S. G., Suryawanshi R. S., Pacharne S., Choudhar A. H. : Economic Geography, Atharav Prakashan, Pune. (2014) (Marathi).



H.O.D 125
Department of Geography

Savitribai Phule, Pune University, Pune
T.Y.B.A (General Geography) G-3
Gg. 310:HUMANGEOGRAPHY
From June 2015

Objectives:

1. This course is to acquaint the students with the nature of man-environment relationship and human capability.
2. To adopt and modify the environment under its varied conditions from primitive life style to the modern living;
3. To identify and understand environment and population in terms of their quality and spatial distribution pattern.
4. To comprehend the contemporary issues facing the global community.

Section – I

Sr. No.	Topic	Learning Points	Periods
1	Introduction to Human Geography	a) Meaning and Definition of Human Geography. b) Nature, Scope and Importance of Human Geography, approach of Human Geography & Branches of Human Geography	10
2	Development of Human Geography	a) Pre-historical Period. b) Medieval Period of Human Geography. c) Modern Period of Human Geography. d) Concepts of Determinism, Possibilism, Stop and Go Determinism	13
3	Human Evolution and Races	a) Stages of Human Evolution. b) Meaning and Definition of Human Race c) Bases of Human Race d) Griffith Taylor's Theory of Human Race e) Pure and Mixed Races	12
4	Form of Adaptation to the Environment	a) Human life in Cold Region - ESKIMO b) Human life in Tropics - PYGMY and BUSHMEN	10

Section – II

5	Study of Indian Tribes	Regional Distribution of Tribes in India a) Bhil b) Gond c) Naga d) Tribes in Maharashtra	11
6	Human Culture	a) World Languages & their distribution b) World's Major Religions & their distribution d) Distribution of Languages & Religions in India	12
7	Movement of Mankind	a) Meaning and Definition of Migration b) Type of Migration c) Causes & Effects of Migration d) Migration in Modern Period	11
8	Population & Resources	a) World Population Distribution b) Effects of Population Growth on Natural Resources c) Malthus Theory of Population Growth d) Population as a Resource	11



Suggested Readings:

1. Aher A. B , Pail V. J. Human Geography Prashant Publication Jalgaon 2015
2. Aher A. B , Markad D.M. Human Geography Payal Publication Pune 2015
3. Bergwan, Edward E: Human Geography; Culture, Connections and Landscape, Prentice-Hall, New Jersey.1995.
4. Carr, M.: Patterns, Process and change in Human Geography. MacMillan Education, London,1987.
5. Fellman, J.L.: Human Geography—Landscapes of Human Activities. Brown and Benchman Pub., U.S.A., 1997.
6. DeBlij H.J.: Human Geography, Culture, Society and Space John Wiley, New York,1996.
7. Johnston, R.J. (editor): Dictionary of Human Geography Blackwell, Oxford, 1994:
8. Mc Bride, P.J.: Human Geography Systems, Patterns and Change, Nelson, U.K. and Canada,1996.
9. Michael, Carr: New Patterns: Process and Change in Human Geography Nelson,1997
10. Rubenstein, J.H. and Bacon R.S.: The Cultural Landscape — an Introduction to Human Geography. Prentice Hall, India, New Delhi,1990.
11. Singh, K.N. :People of India, An introduction Seagull Books, 1992
12. Spate O.H.K. and Learmonth A.T.A. : India and Pakistan Methuen, London.1968.
13. U. V. Jagdale & P. G. Saptarshi: Human Geography (2007), Diamond Publication (Marathi)



H.O.D
Department of Geography.

- c. Qualitative tests for alkaloids, tannins, glycosides, starch, lipids and proteins.
- d. Enzyme activity: catalase

Paper II: BO.342: PLANT ECOLOGY AND BIODIVERSITY

Plant Ecology (24L)

1. Ecology (8L)

Introduction, Interrelationship between the living world and the environment, components and dynamism of Ecosystem, homeostasis.

Impact of human activities on environment – Causes, Prevention and control of – Air, water and Soil Pollution

Brief account of environmental toxicology – Eutrophication, bioaccumulation and biomagnifications

2. Environmental Crisis (3L)

Desertification, Ozone depletion and Global warming

3. Environmental Impact Assessment (3L)

Process, objectives of EIA, Hierarchy in EIA, Historical Review of EIA, Concepts related to EIA, Basic data collection for EIA

4. Environmental Audit (3L)

Meaning, need, Audit Protocol, Processing, Certification, personnel environmental Audit.

5. Ecology and Economics (3L)

Man and Biosphere concept.

Relation between ecology and economics

6. Remote Sensing (4L)

Definition, basic principles,

Process of data acquisition and interpretation,

Global positioning System

Application of Remote Sensing in ecology.



Biodiversity (24L)

Introduction to Biodiversity

(02 L)

Introduction, Concept, Aims and objectives,
Scope and values of Biodiversity.

Characterization of Biodiversity:

(05 L)

Introduction, need for characterization, various disciplines of Biodiversity- Genetics, Species and Ecosystem. Concept of endemism and phytogeography.

Biodiversity Loss:

(03 L)

Loss of Species and Genetic Diversity: Introduction, Factors causing loss of species and genetic diversity, Founder Effects, Genetic Drift, Inbreeding Depression, IUCN Categories (RET plants)

Inventorying and Monitoring of Biodiversity:

(03 L)

Introduction, Necessity, planning and approaches to inventorying and monitoring, capacity building.

Conservation of Biodiversity:

(11L)

Current Practices in Conservation,

In-situ Conservation: International efforts and Indian initiatives; protected areas in India, Concept of Biosphere Reserves and National Parks.

Ex-situ Conservation: Germplasm Collections, Botanical Gardens, Seed Banks, Gene Banks, Pollen Banks, DNA Banks, Wetlands, mangroves and coral reefs. Enlist national agencies playing role in conservation (BSI, NBPGR, ICAR, CSIR, DBT).

Social Approach to Biodiversity Conservation: Sacred Groves, Sthalavrikshas, Chipko Movement, Role of Universities and other Educational Institutions in Biodiversity Conservation

References:

1. **M. Anji Reddy** Textbook of Remote sensing and GIS (Third edition, 2006) by BS Publication, Hyderabad



BO 4.3 Industrial Botany Part II (60L)

Credit I- Herbal Technology (15L)

- | | |
|---|----|
| 1. Introduction, concepts and prospects | 2L |
| 2. Phyto-technology- value addition to biodiversity through chemo prospection | 3L |
| 3. Medicinal plants mentioned in Atharva-Veda with their application | 2L |
| 4. Medicinal mushrooms for healthy life | 2L |
| 5. Natural dyes for cotton and silk industry – <i>Tecomella</i> leaves, Katha and Ravenchi wood, Seeds of <i>Bixa</i> , Babul flowers | 2L |
| 6. Medicinal herbs for dying hair and in cosmetics | 2L |
| 7. Aromatic plants as important sources of essence | 2L |

Credit II- Gardening and Forest Botany (15 L)

- | | |
|--|----|
| 1. Floriculture- significance, importance, scope, prospects and role of floriculture in developing country, its scope for domestic and export market, factors affecting flower production, production of cut flowers and maintaining its quality, prolonging of vase life, packaging of cut flowers, cultivation of carnation, Gerbera, gladiolus, jasmines, orchids | 5L |
| 2. Principles of garden design | 1L |
| 3. Styles of gardening | 1L |
| 4. Indoor gardening | 1L |
| 5. Landscape gardening- Bio-aesthetic planning, landscaping of highways, railway stations and railway lines, bank of rivers and canal, city, town and country sides, educational institutes and factories | 2L |
| 6. Forest Botany- Forest, forestry and man, forest resources, forest organization, forest industries, social forestry, forest management, forests economics | 5L |

Credit III - Industrial Plant Tissue culture (15 L)

- | | |
|---|----|
| 1. Laboratory design, maintenance of plant tissue culture laboratory, sterilization practices in plant tissue culture laboratory. | 3L |
| 2. Case studies of micro propagation of banana, sugarcane, <i>Lilium</i> , orchids and Gerbera with respect to: | |
| a. Selection of elite plants | |
| b. Preparation of explants | |
| c. Surface sterilization | |
| d. Initiation of cultures | |



- e. Subculture
 - f. *In-vitro* rooting/ *In-vivo* rooting
 - g. Acclimatization of tissue cultured raised plants
 - h. Market potential (National, International) 7 L
3. Transporting of ex-agar plantlet, rooting of ex-agar plantlet 1L
 4. Economics of micropropagation of banana, sugarcane, *Lilium*, orchids and Gerbera 2L
 5. Preparation of bankable techno-commercial reports of micropropagation of banana, sugarcane and *Lilium* 2L

Credit IV - Post-Harvest Technology of Fruits (15 L)

1. General account of tropical and subtropical fruits 2L
 - a) Introduction
 - b) World fruit production and contribution to gross domestic product (GDP)
 - c) Global consumption of tropical and subtropical fruits
 - d) International trade in tropical and subtropical fruit
2. Postharvest biology of tropical and subtropical fruits 4L
 - a) Introduction
 - b) Diversity in fruit characteristics
 - c) Maturation and ripening
 - d) Quality attributes
 - e) Environmental factors affecting deterioration
 - f) Biological factors affecting deterioration
 - g) Pathological disorders and insect infestation
 - h) Biotechnological approaches for improving quality and postharvest life
3. Postharvest technologies of fruits 4L
 - a) Introduction
 - b) Maturity and harvesting indices- harvesting, conditioning, quality, the cold chain, centralized packing operations, ripening, processing
4. Preservation and processing of fruits 5L
 - a) Principles of conventional methods of preservation
 - b) Fruit preparation for preservation purposes
 - c) Refrigeration and freezing
 - d) Drying
 - e) Manufacturing and canning of fruit beverages and purees
 - f) Manufacturing of jams and jellies

Reference Books

1. Post-harvest handling of tropical fruit, B R Champ, E Highley & G I Johnson (eds), Australian Centre for International Agricultural Research



2. Post-harvest technology of fruits and vegetables: Handling, processing, fermentation and waste management, L. R Verma and V K Joshi, Indus Publishing Company.
3. Postharvest biology and technology of tropical and subtropical fruits: Volume 1: Fundamental issues, Edited by E Yahia, Universidad Autónoma de Querétaro, Mexico, Woodhead Publishing Series in Food Science, Technology and Nutrition No. 206
4. Processing of Fruits and Vegetables for Value Addition, Vijay Sethi, B.C. Dekka, Vijay Sethi, ShrutiSethai, ShrutiSethi, Indus Publishing.
5. Handbook of Fruits and Fruit Processing, Y.H. Hui, John Wiley & Sons.
6. Advances in Fruit Processing Technologies, Sueli Rodrigues, Fabiano Andre NarcisoFernandes, CRC Press.
7. Quality Control in Fruit and Vegetable Processing, Issue 39, Food & Agriculture Org.
8. Small Scale Food Processing: A Guide to Appropriate Equipment, Peter Fellows, Ann Hampton, Intermediate Technology Publications.
9. Hand book of horticulture, ICAR, New Delhi
10. Floriculture in India, Randhawa and Mukhopaddhay
11. Gardening in India, Bose and Mukherjee, Oxford
12. Introductory ornamental horticulture, Arora, Kalyani publishers
13. Forest Management in India, Vasant Desai, Himalaya Publications
14. Forest and Forestry, K P. Sagreiya, National Book Trust



T.Y.B.Sc.
physics.

Ph-346 Elective II - F : Renewable Energy Sources

1. An Introduction to Energy Sources: (10L)

1. Conventional and non-conventional sources of energy.
2. Structure and characteristics of sun.
3. Solar constant.
4. Electromagnetic energy spectrum
5. Solar radiations outside earth atmosphere.
6. Solar radiation at the earth surface.

Ref. 1: page no. 1 to 11 and 15 to 37

Ref. 3-3.1, 3.2, 3.3, 3.4, 3.5.

2. Photothermal Applications: (10L)

1. Liquid flat plate collector, construction and working, Energy balance equation (without thermal analysis)
2. Concentrating collectors.
Advantage and disadvantage.
3. Solar distillation.
4. Solar drying.
5. Solar cooker(box type)
6. Solar water heating systems.

Ref. 1: 3.3, 3.3(A), 3.5, 3.7, 3.8, 5.2, 5.8, 5.11.

Ref. 2: 2.2.6

3. Photovoltaic systems: (10L)

1. Introduction
2. Photovoltaic principle.
3. Power output and conversion efficiency
4. Limitation to photovoltaic efficiency
5. Basic photovoltaic system for power generation
6. Advantages and disadvantages
7. Types of solar cells
8. Application of solar photovoltaic systems.

Ref. 3 - 15.1, 15.3, 15.4, 15.5, 15.7, 15.8, 15.10.



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4. Energy from Biomass: (12L)

1. Introduction
2. Bio-mass conversion technologies
3. Bio-gas generation
4. Factors affecting bio-digestion (list of factors)
5. Working of biogas plant
6. Advantages and disadvantage of floating and fixed dome type plant
7. Bio-gas from plant wastes
8. Methods for obtaining energy from biomass
9. Thermal gasification of biomass
10. Working of downdraft gasifier
11. Advantages and disadvantages of biological conversion of solar energy

Ref 1: 7.1, 7.2, 7.2.1, 7.2.2, 7.4, 7.5, 7.6, 7.7, 7.8, 7.11, 7.23, 7.24.1, 7.25.

Ref 2: 10.3 (page no 374 to 380)

5. Wind Energy and Energy Audit: (06L)

- 5.1 Introduction
- 5.2 Classification and description of wind machines
- 5.3 Wind data
- 5.4 Introduction to energy audit

Ref -2 (10.2 pages from 353-366)

Reference Books:

1. Non conventional Energy sources, G. D. RAI (4th edition), Khanna Publishers, Delhi.
2. Solar Energy, S.P. Sukhatme (second edition), Tata Mc.Graw Hill Ltd, New Delhi.
3. Solar Energy Utilisation, G. D. RAI (5th edition), Khanna Publishers, Delhi.

List of Experiments:

1. Fuel value of wood/charcoal.
2. Study of sensible heat storage using liquid.
3. Selective and Non-selective coatings - Determination of Selectivity ratio.



4. Thermal efficiency of liquid – flat plate collector.
5. Study of box type solar cooker.
6. Determination of instantaneous thermal efficiency of parabolic collector.



M.Sc. Physics

PHYDT703/ PHYDT704: ENERGY STUDIES I

Module 1: Indian Energy Scenario

1 credit

Role of energy in economic development and social transformation, Energy and gross domestic

product (GDP), Gross National Product (GNP) and its dynamics.

Various types of energy sources: Energy sources and overall energy demand, Availability of

energy sources, Energy consumption in various sectors and its changing pattern, projected energy demands.

Non Renewable Energy sources : Coal, Oil, Natural gas, Nuclear power, Hydro-electricity,

Renewable Energy sources: Solar ,Wind, Biomass, Tidal, Ocean wave, Ocean thermal, Geothermal and other , Depletion of energy sources and impact of exponential rise in energy

consumption on economics of India and on International relations.

Energy Security: Energy for security and security of energy, Energy consumption and its impact

on environmental climatic change.

Future Energy Option: Sustainable development, Energy crisis, Transition from carbon free

technologies, Parameters of transition, Carbon credits.

Module 2: Solar Radiation and Its Measurements

1 credit

Importance of Solar Energy : Nature of solar radiation, Sun as a fusion reactor, special distribution of extraterrestrial radiation, Estimation of extraterrestrial solar radiation, Radiation on horizontal and tilted surfaces, Beam, diffuse, global radiation and their measurement.

Available solar radiation, Measurement of beam, diffuse, global radiation,

Pyranometer, Pyrheliometer, Sunshine duration recorder Angstrom relation.

Ref. no. 8

Module 3: Basics of Heat transfer

1 credit

Heat and Thermodynamics: Basic units, dimensions, Concept of heat, energy and work, Ideal gas flow, 1st and 2nd law of thermodynamics, Types of heat transfer.

Conductive heat transfer: Fourier's law, Stefans-Boltzman relation and IR heat transfer between gray surfaces.

Radiative heat transfer: sky radiation, radiation heat transfer coefficient

Convective heat transfer: Natural and forced convection, natural convection between parallel plates, Non-dimensional numbers, conductive heat transfer coefficient, Heat

transfer due to wind.

Ref. no. 9



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Module 4: Energy Storage

1 credit

Types of energy storage systems : sensible and latent heat storage systems, Electric energy storage systems, Chemical energy storage systems, Heat exchanges, Hydrostorage, solar pond as a energy storage, Green house.

Ref.no. 11

Reference Books:

1. TEDDY Year Book, (Tata Energy Research Institute (TERI) Publication, New Delhi).
2. World Energy Resources, Charles E.Brown (Springer Publication), 2002.
3. Energy Policy for India, B.V. Desai (Wiley Eastern Publication)
4. Handbooks of Solar Radiation , A.Mani (Allied Publishers), 1980.
5. Solar Energy Fundamentals and Applications, H.P. Garg and Satya Prakash, (Tata McGraw Hill), 1977.
6. Treatise on Solar energy, H.P. Garg, Volume 1,2 and 3.(John Wiley and Sons) 1982
7. Principles of Solar Engineering, F.Kreith and J.F. Kreider, McGraw Hill , 1978
8. Solar Energy Thermal Processes, J.A. Duffie and W.A. Beckman, (John Wiley and Sons)1980
9. Heat and Thermodynamics, M.W. Zemansky,(McGraw Hill Publication)
10. Principles of Solar Energy Conversion, A.W.Culp (McGraw Hill Publication)
11. Solar Energy Principles of Thermal Collection and Storage, S.P. Sukhatme, 2nd edition (Tata McGraw Hill Publication C.Ltd.(, 1976
12. Solar Energy Utilization, G.D.Rai (Khanna Publishers) 1996
13. Solar Thermal Engineering, J.A. Duffie(Academic Press)
14. Renewable Energy Sources and Conversion Technology, N.K. Basaf, M. Kleeman and S.N. Srinivas ,(Tata Energy ReserchInstitute, New Delhi) 1996

PHYDP705 Special Laboratory I

List of Experiments:

1. Determination of Calorigic value of Wood/Cow dung.
2. Study of Optical Properties of selective coatings.
3. Study of Photovoltaic a Characteristics of Solar Cell (Variation of Intensity, Distance between Source and Solar Cell, and load)
4. Study of power versus load characteristics of Solar Power Photovoltaic Systems and Study of Series and Parallel Combination of Solar Photovoltaic panels.
5. Study of Solar Collector (Efficiency versus $\Delta T/l$)
6. Visit to solar energy farm(Solar PV plant/Wind energy/ Thermal energy/ Hydro electric/Co generation plant).



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M.Sc. Physics

PHYDT803/ PHYDT804: ENERGY STUDIES II

Module 1: Solar Photovoltaics (SPV)

1 credit

Solar Photovoltaics (SPV) Conversion : Basic principles, Types of solar cell materials, Fabrication of solar photovoltaic cells, solar cell parameters and characteristics, Modules.

Block diagram of general SPV conversion system and their characteristics, Different configurations, Application (such as street light, water pumps, Radio/TV, Small capacity power generation) Solar Photovoltaic (SPV) Systems Designing : Load estimation, selection of inverters, battery sizing, array sizing.

Ref. no. 2,15.

Module 2: Photothermal applications of Solar Energy

1 credit

Selective coatings : Ideal characteristics of selective coating for various applications, Types of selective coatings, materials and techniques for selective coatings, Effect of selective coating on the efficiency of solar collectors.

Solar Thermal Devices and Systems : Different types of collectors , Flat plate collector(Basic principle, construction, Energy balance equation of steady state, Testing, Methods to reduce losses), Solar cookers, Domestic hot water system, Solar dryers, solar pond, Solar still, Solar furnace, Solar refrigeration, Solar concentraters, systems based on use of solar concentraters.

Ref. no. 2, 6.

Module 3: Hydrogen Energy

1 credit

Hydrogen Fuel : Importance of Hydrogen as a future fuel, Sources of Hydrogen, Fuel of vehicles.

Hydrogen production : Production of Hydrogen by various methods, Direct electrolysis of water, Direct thermal decomposition of water, Biological and biochemical methods of hydrogen production.

Hydrogen storage : Gaseous, Cryogenic and Metal hydride. Utilization of hydrogen ; Fuel cell – Principle, construction and applications.

Ref.no. 2,11,12.

Module 4: Wind and Bio Energy

1 credit

Wind Energy : Introduction, Basic principle of wind energy conversion, Extraction of maximum power from wind and its dependence on various parameters.

Wind Mills : Types of wind mills, Vertical axis and Horizontal axis wind mills their performance, Merits and Demerits, Limitations of wind energy conversions.

Bio Energy : Biomass, Generation and utilization, Property of biomass, Agriculture crop and Forestry residues used as fields. Physical, Chemical and biological conversion of biomass into useful form of energy, Gasification, Biomass gasifiers and types.



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Biogas : Introduction , Generation of biogas, Aerobic and anaerobic bioconversion process.

Substances used to produce biogas (Cow dung, Human and other agricultural waste, Municipal waste etc.), Digesters and their designs, Pyrolysis and gasification, Fermentation process.

Biofuels : Types of biofuels,, Production processes, Biofuel applications, Ethanol as a biofuel.

Ref. no. 2,9,14.

Reference Books:

1. Climatological and Solar data for India, Seshadri. (Sarita Prakashan), 1969.
2. Solar Energy Utilization, G.D.Rai, 9Khanna Publishers), 1995.
3. Energy technology, S.Rao and B.B. Parulekar (Khanna Publishers), 1995
4. Terrestrial Solar Photovoltaics, Tapan Bhattacharya. (Namsa : Publication House, New Delhi)
5. Solar Cells-operating Principles, technology and System Applications, Martin A. Green (Prentice Inc. USA).
6. Solar Thermal Engineering, J.A. Duffie (Academic Press)
7. Renewable Energy Sources and Conversion Technology, N.K. Bansal, M. Kleeman and S.N. Sreivas 9 Tata Energy Research Institute, New Delhi), 1996.
8. Fundamentals of Solar Cells, F.A. Faherenbruch and R.H. Bube 9Academic Press).
9. Biomass Energy Systems, Venkata Ramala and S.N. Srinivas (Tata Energy Research Institute, New Delhi, New Delhi), 1996.
10. Thin Film Solar Cells, K.L. Chopra and S.R.Das (Plenum Press), 1983
11. Solar Hydrogen Energy Systems, T. Ohta (Pergamon Press) 1979
12. Hydrogen Technology for Energy D.A. Maths (Noyes Data Corp.) 1976
13. Handbook Batteries and Fuel Cell, Linden (McGraw Hill) 1984
14. Wind energy Conversion Systems, L.L. Freris (Prentice Hall) 1990
15. Solar PhotoVoltaics. - C.S. Solanki.

PHYDP705: Special Laboratory II

List of Experiments:

1. Study of Hot Water system.
2. Determination of heat Loss Coefficient in Flat Plate Collector.
3. Study of Solar Dryer (Hot Air Collector)
4. Study of Solar Still.
5. Performance Evaluation of Box Type and Concentrating Type Solar Cooker
6. Visit to solar energy farm(Wind energy/ Thermal energy/ Hydro electric/ Co generation plant)



General Chemistry

Semester – I

CHA-190: Safety in Chemical Laboratory and Good Laboratory Practices (4 Credits, 48 L, 12 T)

Section-I

1. **History and importance of safety and health in Laboratory** 4L
Importance of Safety and security, responsibility and accounting for safety, types of hazards and risk in chemical laboratory, Moral legal and financial reasons. Introduction to different types of Hazards
Ref. 1 Page 1-11
2. **Establishing Effective chemical safety and security management** 2L
Introduction, responsibility of laboratory safety and security, ten step to creating an effective laboratory chemical safety and security management safety
Ref.1 Page 15-19
3. **Personnel protective and other safety equipments** 3L
Personnel clothing, foot protection, eye and face protection, safety shield, fire safety equipments, heat and smoke detector, respirators, safety showers, eye wash unit
Ref. 1 Page 215-220
4. **Assessing routes of exposer for toxic chemicals** 4L
Inhalation, contact with skin and eye, ingestion, assessing risk with acute toxicology, specific chemical hazard, First aid for contact of different chemicals on skin, eyes, and inhalation ingestion.
Ref. 1 Page 201-210.
5. **Assessing hazards and risk in the laboratory** 7L
Introduction, consulting source of information, evaluating the toxic risk of laboratory chemicals, assessing flammable, reactive and explosive hazards, Assessing physical hazards, assessing bio hazards
Ref. 1 Page 73-90
6. **Managing Chemicals** 4L
Introduction, green chemistry for every laboratory, purchasing chemicals, inventory and tracking of chemicals, storage of chemicals, transfer, transport, shipment of chemicals.
Ref. 1 Page 92-104

Section-II

7. **Working with Chemicals** 8L
Introduction, careful planning , general procedure for working with hazardous chemicals, working with substance of high toxicity, working with bio hazards material, working with flammable chemicals, working with highly reactive or explosive chemicals
Ref. 1 Page 107-125
8. **Working with laboratory equipments** 3L



Introduction, working with electrically powered equipment, working with compressed gases, working with high and low pressure and temperatures.

Ref. 1 Page 137-143

9. **Managing chemical waste**

Introduction, identifying waste and its hazards, collecting and storing waste, treatment and hazard reduction, disposal options

5L

Ref. 1 Page 152-161.

10. **Introduction to Good Laboratory Practices and its applications**

4L

General introduction, Drug development process and non-regulated vs. regulated area, GMP, Introduction to GLP and its applications, GLP Training, introduction, Fundamental points of GLP

Ref. 2 Page 9-18

11. **Rules for conduct of studies**

4L

General aspects, Study plan of protocol, Content of the protocol, Identification, Approval of protocol, protocol amendment, Standard operating procedures, SOP system overview

Ref. 2 Page 27-36

Ref. 1 Chemical Laboratory Safety and Security, A Guide Prudent Chemical Management

Edited by Lisa Moran and Tina Masciangioli

Available Online www.nap.edu (Free)

Ref. 2 Hand Book, Good Laboratory Practice (GLP)

Available Online (Free)



Semester-III

Course: Environmental and Green Chemistry (CH-336D)

Name of the Topic	Number of lectures
1. Concepts and scope of Environmental Chemistry	02
2. Atmosphere and Air Pollution	14
3. Hydrosphere and water pollution	08
4. Introduction to Green Chemistry	10
5. Green Chemistry and Technology for sustainable development	10
6. Green Chemistry and Hazardous Organic Solvents	04
Total lectures	48

Chapter 1: Concepts and scope of Environmental Chemistry

(02)

- 1.1 Introduction
- 1.2 Terminologies
- 1.3 Units of concentration
- 1.4 Segments of Environment

Ref. 1, Ref. 3

Aims and Objectives-

Students should know-

- i. Importance and conservation of environment.

Chapter 2: Atmosphere and Air Pollution

(14)

- 2.1 Composition and structure of atmosphere
- 2.2 Chemical and photochemical reactions in atmosphere
- 2.3 Chemistry of O_3 , SO_x , NO_x and chlorides in atmosphere
- 2.4 Primary air pollutants
- 2.5 Sampling of air
- 2.6 Particulate matter: Inorganic and organic
- 2.7 Smog: reducing and photochemical
- 2.8 Mechanism of ozone depletion
- 2.9 Stability and reactions of CFCs
- 2.10 Harmful effects of CFCs
- 2.11 CFCs substitutes
- 2.12 Bhopal gas tragedy

Ref. 1, Ref. 3, Ref. 5

Aims and Objectives-

Students should know-

- i. Segments of atmosphere



University of Pune

**F. Y. B. A. Political Science
G-1 General Paper**

INDIAN GOVERNMENT AND POLITICS ✓

**OR
MODERN INDIAN POLITICAL
THOUGHT**

(80. 20 pattern to be Implemented from 2013-2014)



University of Pune
F. Y. B. A. Political Science
G-1 General Paper

INDIAN GOVERNMENT AND POLITICS

(80. 20 pattern to be implemented from 2013-2014)

COURSE RATIONALE

This paper focuses in detail on the political processes and the actual functioning of the political system. It simultaneously studies in detail the political structure both Constitutional and Administrative. It emphasizes on local influences that derive from social stratification of castes and jatis, from language, religion, ethic and economic determinants and critically assesses its impact on the political processes. The major contradictions of the Indian Political Process are to be critically analyzed along with an assessment of its relative success and failure in a comparative perspective with other developing countries and in particular those belonging to the South Asian region.

Term I

Period

Topic 1: Background and the Salient Features of Indian Constitution

- a) Formation of Constituent Assembly
- b) Philosophy of the Preamble for Indian Constitution 12
- c) Major Features: Parliamentary Democracy, Federalism, Independent Judiciary –Social Justice and Social Transformation

Topic 2: Fundamental Rights, Duties and the Directive Principles of State Policy

- a) Nature of Fundamental Rights –Major Fundamental Rights-Right to Equality, Right to Liberty, Right to Freedom of Religion, Cultural and Educational Rights 12
- b) Importance of Fundamental Duties
- c) Nature and Significance of Directive Principles of State Policy



Topic 3: Federalism

- a) Salient Features of Indian Federalism
- b) Centre –State Relations 12
- c) Issues of Conflict-Water Issue, Border Issue and Sharing of Resources

Topic 4: Structure of Union Government -Legislature-Executive –Judiciary

- a) Union Legislature - Structure-Powers and Role
- b) Union Executive-President, Prime Minister and his Cabinet- 12
Role and Functions
- c) Judiciary- Nature of Judiciary, Supreme Court-Powers and Functions

Term II

Topic 5: Structure of State Government -Legislature-Executive –Judiciary

- a) State Legislature - Structure-Powers and Role 12
- b) State Executive-Governor , Chief Minister and his Cabinet-
Role and Functions
- c) Judiciary- Nature of Judiciary, High Court-Powers and Functions

Topic 6: Party System and Elections

- a) Nature and Changing Pattern of Party System
- b) Elections- Election Commission :-Major Features of Electoral System and 12
Patterns Of Voting Behavior
- c) Rise and Role of Regional Parties

Topic 7: Role of Caste and Religion in Indian Politics

- a) Caste and Politics of Identity
- b) Rise of OBCs 12
- c) Religion and Politics of Communalism



T.V. Sathyamurthy, Social Change and Political Discourse in India: Structures of Power, Movements of Resistance, Vol.4., Oxford University Press, 1996.

Rajendra Vora and Suhas Pulshikar, Indian Democracy: Meaning and Practice, Sage Publication-New Delhi, 2004.

Rajendra Vora and Suhas Pulshikar, Bhartiya Lokshahi: Arth and Vavyhar, Diamond Publication 2010.

Singh Mahendra Prasad and Raj Subhendu Ranjan, The Indian Political System (edt) Dorling Kindersley (India) Pvt Ltd, Pearson Education Society Delhi 2012.

कारेकर मंजिरी आणि सुवर्णा बेनके, 'भारताचे शासन आणि राजकारण', पीअर्सन एज्युकेशन, दिल्ली २०१४

जाधव तुकाराम आणि महेश शिरपुरकर 'भारतीय राज्यघटना व घटनात्मक प्रक्रिया', द युनिक अॅकॅडमी, प्रथम आवृत्ती जाने.२०११

भोळे भा. ल.— 'भारतीय गणराज्याचे शासन आणि राजकारण' पिंपळापुरे अॅण्ड कंपनी पब्लिशर्स नागपूर, जून २००३

प्रा. बी. बी. पाटील, प्रा. सी. ठर्मिला चव्हाण, 'भारतीय शासन आणि राजकारण' फडके प्रकाशन, कोल्हापूर.

खाईकर अनंत— 'भारतीय शासन आणि राजकारण' निराली प्रकाशन, पुणे

चाचल वि. मा., स. मा. गोळवलकर—भारतीय गणराज्य (शासन आणि राजकारण), सुविचार प्रकाशन मंडळ, पुणे—४११०३०

Jha Rajesh K., Fundamentals of Indian Political System Pearson, Delhi.

Hoveyda Abbas, Ranjay Kumar, Mohammed Aftab

Alam- Indian Government and Politics, Person, Delhi.

साठे सत्यरंजन — भारतीय स्वातंत्र्याची ५० वर्षे

खांदवे एकनाथ — महाराष्ट्राचे शासन व राजकारण, आरती प्रकाशन, कर्जत



SYLLABUS FOR TYBA POLITICAL SCIENCE (S-4)**INTERNATIONAL POLITICS****Course Rationale:**

This paper deals with concepts and dimensions of international relations and makes an analysis of different theories highlighting the major debates and differences within the different theoretical paradigms. The dominant theories of power and the **question of equity and justice**, the different aspects of balance of power leading to the present situation of a unipolar world are included. It highlights various aspects of conflict and conflict resolution, collective security and in the specificity of the long period of the post Second World War phase of the Cold War, of Détente and Deterrence leading to theories of rough parity in armaments.

SECTION-I:

UNIT I :- International Politics	12
a) Nature and Scope	
b) Theories of Idealism and Realism	
UNIT II :- Approaches to the Study of International Relations	12
a) Power Approach	
b) Decision Making Approach	
c) System Approach	
UNIT III :- Power	12
a) Meaning	
b) Elements	
c) Changing Nature of the National Power	
UNIT IV :- Balance of Power	12
a) Meaning and Nature	
b) Characteristics	
c) Changing Nature of the Balance of Power	

SECTION -II

UNIT V :- Security	12
a) Meaning and definition	
b) Regional Security	
c) Collective Security	
UNIT VI :- Diplomacy	12
a) Meaning	
b) Types of Diplomacy	
c) Challenges To Diplomacy	



T.Y.B.A. -
politic

UNIT VII :- Disarmament 12
a) Meaning and Nature
b) Types of Disarmament
c) Issues and Challenges

UNIT VIII :- Issues in International Politics 12
a) Human Rights - Its variations and Measures
b) Terrorism - Causes and Consciousness

Readings:

D. A. Baldwin (ed.), Neo-realism and Neo-liberalism, New York, Columbia University Press, 1993. (ed.), Paradoxes of Power, New York, Basil Blackwell, 1989.

J. C. Bennett (ed.), Nuclear Weapons and the Conflict of Conscience, New York, Charles Scribner's Sons, 1962.

D.G. Brennan (ed.), Arms Control, Disarmament and National Security, New York, George Braziller, 1961.

H. Bull, The Control of the Arms Race, New York, Praeger, 1961.

K von Clausewitz, War, Politics and Power: Selections, Chicago, Henry Regnery Company, 1962.

W. D. Coplin, Introduction to International Politics, Chicago, Markham, 1971

K. Deutsch, The Analysis of International Relations, Englewood Cliffs NJ, Prentice Hall, 1967. J. E. Dougherty, How to think about Arms Control and Disarmament, New York, Alfred A. Knopf, 1962

R. L. Pfaltztraff, Jr., Contending Theories of International Relations, Philadelphia, J.B. Lippincott Co., 1970.

W. Epstein, Disarmament: 25 years of Effort, Toronto, Canadian Institute of International Affairs, 1971.

The Last Chance: Nuclear Proliferation and Arms Control, New York, The Free Press, 1976.

R. A. Falk, Law, Morality and War in the Contemporary World, New York, Frederick A Praeger, 1963

H. W. Forbes, The Strategy of Disarmament, Washington DC, Public Affairs Press, 1962.

J. Galtung, The True Worlds: A Transnational Perspective, New York, The Free Press, 1980.

F. I. Greenstein and N. W. Polsby, Theory of International Relations, Reading Massachusetts, Addison-Wesley, 1979.

K.J. Holsti, Why Nations Realign, London, Allen and Unwin, 1982.

———, The Dividing Discipline, Boston, Allen and Unwin, 1985.

———, Peace and War: Armed Conflicts and International Order 1648-1989, Cambridge, Cambridge University Press, 1991.

A. Hurrell, "Collective Security and International Order Revisited" International Relations, Vol. II, No.1, April.

. R. O. Keohane, After Hegemony: Cooperation and Discord in the World Political Economy, Princeton NJ, Princeton, University Press, 1984.

——— (ed.), Neo-realism and Its Critics, New York, Columbia University Press, 1986.

———, International Institutions and State Power, Boulder Colorado, Westview Press, 1989. ——— and E. Ostrom (eds.), Local Commons and Global Interdependence: Heterogeneity and Co-operation in Two Domains, London, Sage, 1994.

S. D. Krasner (ed.), International Regimes, Ithaca NY, Cornell University Press, 1983.

Political Science 23 H. D. Lasswell, World Politics and Personal Insecurity, New York, McGraw-Hill Book Company, 1953.

H. J. Morgenthau, Politics Among Nations, 6th edition, revised by K. W. Thompson, New York, Alfred Knopf, 1985.

J. A. Vasquez, The Power of Power Politics, London, Frances Pinter, 1983.



43

- K. N. Waltz, Theory of International Politics, Reading Massachusetts, Addison-Wesley, 1979.
———, "The emerging structure of International Politics", International Security, 18, 1993, pp. 44-79.
- A. Wolfers, Discord and Collaboration, Baltimore, Johns Hopkins University Press, 1962
- Dr. Raipurkar Vasant, International Relations (Marathi), Mangeshi Prakashan Nagpur, 2009.
- Dr. Amrutkar Prashant, Theory of International Relations (Marathi), Chinmay Publication, Aurangabad, 2014.
- Dr. Pendase Aruna and Uttara Sahashrabhudhe, International Relations (Marathi), Orient Longman Pvt. Ltd., Mumbai.
- Dr. Deolankar, Shailendra – International Relations (Marathi), Vidya Books, Aurangabad, 2004.



University of Pune
S.Y.B.A Political Science
Special Paper-I

S.Y.B.A.
Special

WESTERN POLITICAL THOUGHT

(80-20 Pattern to be implemented from 2014-2015)

Course Objectives:

This paper studies the classical tradition in political theory from Plato to Marx with the view to understand how the great Masters explained and analyzed political events and problems of their time and prescribed solutions. The texts are to be interpreted both in the historical and philosophical perspectives to understand the universality of the enterprise of political theorizing. The limitations of the classical tradition, namely its neglect of women's concerns and issues and the non-European world are critically examined. The legacy of the thinkers is explained with the view to establish the continuity and change within the Western political tradition.

<u>Term-I</u>	Weight age
<u>Unit: 1 - Plato</u>	12
a) Ideal State & Philosopher King	
b) Views on Education	
c) Views on Justice & Communism	
<u>Unit: 2 - Aristotle</u>	12
a) Views on State	
b) Views on Property, Views on Slavery	
c) Views on Revolution	
<u>Unit: 3 - Machiavelli</u>	12
a) Views on Human Nature	
b) Views on Religion & Morality	
c) Theory of Statecraft	
<u>Unit: 4 - J.S.Mil</u>	12
a) Views on Utilitarianism	
b) Views on Liberty	
c) Views on Representative Government & State	
<u>Term-II</u>	
<u>Unit: 5 - Karl Marx</u>	12
a) Historical Materialism	
b) Theory of Class & Struggle	
c) Theory of State & Revolution	
<u>Unit: 6 - Hobbes</u>	12
a) State of Nature	
b) Views on Human Nature	
c) Theory of Social Contract	



Unit: 7 – John Locke	12
a) Theory of Social Contract	
b) Views on natural Rights	
c) Views on civil society & State	
Unit: 8 - Rousseau	12
a) State of Nature & Views on Human Nature	
b) Theory of General Will	
c) Theory of Social Contract	

Readings:

- Shefali Jha, Western Political Thought from Plato to Marx, Pearson, 2012
- Biran R. N., Western Political Thought from Socrates to the Age of Ideology, Pearson 2008.
- Garde D.K., 1977, Western Political Thought, Rane Pub.Pune (**Marathi Book**).
- Sakalkar E. & Ashok Jain, 1990, Western Political Thought, Sheth Pub.Pune (**Marathi Book**).
- Deo Vijay, Sharad Gosavi & Sanjoyt Apte, 2012, Western Political Thought, Diamond Pub. Pune (**Marathi Book**)
- A. Ashcraft, Revolutionary Politics and Locke's Two Treatises of Government, London, Allen and Unwin, 1986.
- A. Avineri, The Social and Political Thought of K. Marx, New Delhi, S. Chand and Co., 1979.
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General Paper G-2 (OR)

S.Y. B.A.
General.

GOVERNMENT AND POLITICS OF U.K., U.S.A

(80-20 Pattern to be implemented from 2014-2015)

Course Objectives:

This paper studies the major constitutions of the World by adopting a comparative approach. The constitutional and legal provisions, the ideological basis, the institutional arrangement and their social and economic background are to be explained, analyzed and evaluated critically. The historical backgrounds to individual constitutions are to be emphasized to gain an understanding of its evolution. The comparative perspective enables the student to understand the differences and similarities between the various constitutional arrangements. Furthermore the political institutions are to be studied in light of the political process to gain an understanding of the dynamics of actual politics and policy making.

Term-I

	Weightage
<u>Unit: 1 - Constitutions</u> Nature and Evolution (U.S.A, U.K)	12
<u>Unit: 2 - Legislature</u> Parliament (UK): Structure, powers & Role Congress (USA): Structure, powers & Role	12
<u>Unit: 3- Executive</u> Prime Minister & Cabinet (U.K). President and Cabinet (U.S.A)	12
<u>Unit: 4- Judiciary</u> Nature, Power & Functions of Judiciary (U.K & U.S.A)	12

Term-II

<u>Unit: 5- Political Parties</u> Political Parties: Relation between political parties & government. Two party system, features and role of parties in UK, USA	12
<u>Unit: 6- Interest groups</u> Interest groups: their roles and performance in UK and USA	12
<u>Unit: 7- State Governments</u> State Governments in UK and USA	12
<u>Unit: 8- social movements</u> Social Movements: Human Rights, Women's Movement, Ethnic Movements	12



Readings:

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SYLLABI

HUMAN RIGHTS OF VULNERABLE AND DISADVANTAGED GROUPS

I GENERAL INTRODUCTION

Meaning and Concept of Vulnerable and Disadvantaged Groups, Customary, Socio-Economic and Cultural Problems of Vulnerable and Disadvantaged Groups

II SOCIAL STATUS OF WOMEN AND CHILDREN IN INTERNATIONAL AND NATIONAL PERSPECTIVE

Human Rights and Women's Rights –International and National Standards
Human Rights of Children-International and National Standards

III STATUS OF SOCIAL AND ECONOMICALLY DISADVANTAGED PEOPLE

Status of Indigenous People and the Role of the UN
Status of SC/ST and Other Indigenous People in the Indian Scenario
Human Rights of Aged and Disabled
The Minorities and Human Rights

IV HUMAN RIGHTS OF VULNERABLE GROUPS

Stateless Persons
Sex Workers
Migrant Workers
HIV/AIDS Victims



Syllabi Course III

Human Rights and Duties in India: Law, Policy, Society and Enforcement Mechanism

Credit: 1

I. Human Rights in Indian Context

- a) Indian Bill of Rights and Sarvodaya
- b) Preamble- Fundamental Rights- Directive Principles- Fundamental Duties

II. Human Rights- Enforcement Mechanism

- a) Human Rights Act, 1993
- b) Judicial Organs- Supreme Court (Art 32) and High Courts (Art 226)
- c) Human Rights Commission- National and State of Maharashtra
- d) Commissions of Women, children, Minority, SC/ST
- e) Survey of International Mechanism

III. Human Rights Violations and Indian Polity

- a) Inequalities in society-population-illiteracy-poverty-caste-inaccessibility of legal redress
- b) Abuse of Executive Power-Corruption-Nepotism and favoritism
- c) Human Rights and Good Governance

IV. Role of Advocacy Groups

- a) Professional Bodies: Press, Media, Role of Lawyers-Legal Aid
- b) Educational Institutions
- c) Role of Corporate Sector
- d) Non-Governmental Organisations



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The syllabus

Course I

Introduction to Human Rights and Duties

Credit: 1

- I) **Basic Concept**
 - a) Human Values- Dignity , Liberty, Equality , Justice, Unity in Diversity, Ethics and Morals
 - b) Meaning and significance of Human Rights Education

- II) **Perspectives of Rights and Duties**
 - a) Rights: Inherent-Inalienable-Universal- Individual and Groups
 - b) Nature and concept of Duties
 - c) Interrelationship of Rights and Duties

- III) **Introduction to Terminology of Various Legal Instruments**
 - a) Meaning of Legal Instrument- Binding Nature
 - b) Types of Instruments: Covenant-Charter-Declaration-Treaty-Convention-Protocol- Executive Orders and Statutes

- IV) **United Nations And Human Rights**
 - a) Brief History of Human Rights- International and National Perspectives
 - b) Provision of the charters of United Nations
 - c) Universal Declaration of Human Rights- Significance-Preamble
 - d) Civil and Political Rights-(Art. 1-21)
 - e) Economic, Social and Cultural Rights-(Art.22-28)
 - f) Duties and Limitations-(Art. 29)
 - g) Final Provision (Art. 30)



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AU. P.G.

Course II

Human rights of vulnerable and disadvantaged groups

Credit: 1

I) General Introduction

- a) Meaning and Concept of Vulnerable and Disadvantaged
- b) Groups, Customary, Socio-Economic and Cultural Problems of
- c) Vulnerable and Disadvantaged Groups.

II) Social status of women and children in International and national perspective

- a) Human Rights and Women's Rights - International and National Standards
- b) Human Rights of Children - International and National Standards.

III) Status of Social and Economically Disadvantaged people

- a) Status of Indigenous People and the Role of the UN
- b) Status of SC/ST and Other Indigenous People in the Indian Scenario
- c) Human Rights of Aged and Disabled
- d) The Minorities and Human Rights

IV) Human rights of vulnerable groups

- a) Stateless Persons
- b) Sex Workers
- c) Migrant Workers
- d) HIV/AIDS Victims



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Introduction to Cyber Security / Information Security

Syllabus for 'Introduction to Cyber Security / Information Security' program* for students of University of Pune is given below.

The program will be of 4 credits and it will be delivered in 60 clock hours**.

*: Course material for this program will be developed by CINS

** : These clock hours also includes practical sessions and demonstrations wherever required.

SR. NO.	TOPIC	HOURS	MARKS
1	Module 1: Pre-requisites in Information and Network Security	14	25
	Chapter 1: Overview of Networking Concepts	3	
	Chapter 2: Information Security Concepts	3	
	Chapter 3: Security Threats and Vulnerabilities	5	
	Chapter 4: Cryptography / Encryption	3	
2	Module 2: Security Management	13	25
	Chapter 1: Security Management Practices	7	
	Chapter 2: Security Laws and Standards	6	
3	Module 3: Information and Network Security	13	25
	Chapter 1: Access Control and Intrusion Detection	3	
	Chapter 2: Server Management and Firewalls	4	
	Chapter 3: Security for VPN and Next Generation Technologies	6	
4	Module 4: System and Application Security	20	25
	Chapter 1: Security Architectures and Models	5	
	Chapter 2: System Security	5	
	Chapter 3: OS Security	5	
	Chapter 4: Wireless Network and Security	5	

M.Sc. I
Ist Term →

M.Sc. I
IInd Term →

B.Sc. II
Ist term →

B.Sc. II
IInd Term →



Detail Syllabus for Credit Course for University of Pune

Module 1: Pre-requisites in Information and Network Security

Chapter 1: Overview of Networking Concepts

1. Basics of Communication Systems
2. Transmission Media
3. Topology and Types of Networks
4. TCP/IP Protocol Stacks
5. Wireless Networks
6. The Internet

Chapter 2: Information Security Concepts

1. Information Security Overview: Background and Current Scenario
2. Types of Attacks
3. Goals for Security
4. E-commerce Security
5. Computer Forensics
6. Steganography

Chapter 3: Security Threats and Vulnerabilities

1. Overview of Security threats
2. Weak / Strong Passwords and Password Cracking
3. Insecure Network connections
4. Malicious Code
5. Programming Bugs



6. Cyber crime and Cyber terrorism
7. Information Warfare and Surveillance

Chapter 4: Cryptography / Encryption

1. Introduction to Cryptography / Encryption
2. Digital Signatures
3. Public Key infrastructure
4. Applications of Cryptography
5. Tools and techniques of Cryptography

Module 2: Security Management

Chapter 1: Security Management Practices

1. Overview of Security Management
2. Information Classification Process
3. Security Policy
4. Risk Management
5. Security Procedures and Guidelines
6. Business Continuity and Disaster Recovery
7. Ethics and Best Practices

Chapter 2: Security Laws and Standards

1. Security Assurance
2. Security Laws
3. IPR



4. International Standards
5. Security Audit
6. SSE-CMM / COBIT etc

Module 3: Information and Network Security

Chapter 1: Access Control and Intrusion Detection

1. Overview of Identification and Authorization
2. Overview of IDS
3. Intrusion Detection Systems and Intrusion Prevention Systems

Chapter 2: Server Management and Firewalls

1. User Management
2. Overview of Firewalls
3. Types of Firewalls
4. DMZ and firewall features

Chapter 3: Security for VPN and Next Generation Technologies

1. VPN Security
2. Security in Multimedia Networks
3. Various Computing Platforms: HPC, Cluster and Computing Grids
4. Virtualization and Cloud Technology and Security

Module 4: System and Application Security



Chapter 1: Security Architectures and Models

1. Designing Secure Operating Systems
2. Controls to enforce security services
3. Information Security Models

Chapter 2: System Security

1. Desktop Security
2. email security: PGP and SMIME
3. Web Security: web authentication, SSL and SET
4. Database Security

Chapter 3: OS Security

1. OS Security Vulnerabilities, updates and patches
2. OS integrity checks
3. Anti-virus software
4. Configuring the OS for security
5. OS Security Vulnerabilities, updates and patches

Chapter 4: Wireless Networks and Security

1. Components of wireless networks
2. Security issues in wireless



P.Y. B.A. -
politic

UNIT VII :- Disarmament

12

- a) Meaning and Nature
- b) Types of Disarmament
- c) Issues and Challenges

UNIT VIII :- Issues in International Politics

12

- a) Human Rights - Its variations and Measures
- b) Terrorism - Causes and Consciousness

Readings:

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———, The Dividing Discipline, Boston, Allen and Unwin, 1985.

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Political Science 23 H. D. Lasswell, World Politics and Personal Insecurity, New York, McGraw-Hill Book Company, 1953.

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J. A. Vasquez, The Power of Power Politics, London, Frances Pinter, 1983.



70

(2) M.A.
Marathi

अभ्यासपत्रिका क्रमांक ४
ऐच्छिक विषय - ग्रामीण साहित्य आणि दलित साहित्य. (१०४३३) (4 Credit)

ग्रामीण साहित्य

उद्दिष्टे :

१. स्वातंत्र्यप्राप्तीनंतरच्या कालखंडात ग्रामीण साहित्याच्या निर्मितीची कारणपरंपरा समजावून घेणे.
२. ग्रामीण साहित्याचे स्वरूप व कार्य यांची चिकित्सा करणे.
३. ग्रामीण साहित्यातील विविध वाङ्मयप्रकारांचा विकास कसा होत गेला याचे मूल्यामापन करणे.
४. ग्रामीण साहित्याने दिलेले योगदान, त्याच्या विकासाची गती, दिशा यांची मीमांसा करणे.

सत्र १ - ग्रामीण साहित्य

घटक १

स्वातंत्र्योत्तर मराठी वाङ्मयाचे स्वरूप
ग्रामीण साहित्यात प्रवाह निर्माण होण्याची कारण परंपरा,
सामाजिक आणि वाङ्मयीन परंपरांचे स्वरूप,
कृषी औद्योगिक अवस्थांतर, आधुनिकता, शैक्षणिक विकास, जाणीवजागृती आणि ग्रामीण साहित्य.
यासाठी १५ व्याख्याने घ्यावीत व एक श्रेयांकन देणे (1 Credit)

घटक २

गावगाडयाची जडणघडण : कालची व आजची परिस्थिती- जात, कुटुंब, आर्थिक- सामाजिक संबंध

ग्रामीण व ग्रामीण साहित्य : संज्ञा स्पष्टीकरण,
ग्रामीण साहित्यातून घडणारे सामाजिक, सांस्कृतिक दर्शन,
ग्रामीण साहित्याचे देशीपण व वेगळेपण.

यासाठी १५ व्याख्याने घ्यावीत व एक श्रेयांकन देणे (1 Credit)



ऐच्छिक विषय - दलित साहित्य (20433) (4 Credit)

उद्दिष्टे :

१. स्वातंत्र्यप्राप्तीनंतरच्या कालखंडात दलित साहित्याच्या निर्मितीची कारणे, परंपरा आणि या साहित्याने दिलेल्या आव्हानांचा अभ्यास करणे.
२. दलित साहित्यातून व्यक्त होणा-या वेदनांचे व विद्रोहाचे स्वरूप जाणून घेणे.
३. दलित साहित्याने निर्माण केलेल्या विविध वाङ्मय प्रकारांच्या विकासांचे मूल्यमापन करणे.

सत्र २ - दलित साहित्य

घटक १

स्वातंत्र्यप्राप्तीनंतरचे मराठी वाङ्मयाचे स्वरूप .

दलित साहित्याच्या निर्मितीमागील प्रेरणा,

जागतिक - सांस्कृतिक आणि वाङ्मयीन जाती व आर्थिक व्यवस्थेमुळे झालेले शोषण,

डॉ. अंबेडकरांचे तत्त्वज्ञान ,चळवळी तसेच बुद्ध, म.फुले, कार्ल मार्क्स यांच्या विचारधारेचा प्रभाव, मानवी मूल्यांचे भान,

यासाठी १५ व्याख्याने घ्यावीत व एक श्रेयांकन देणे (1Credit)

घटक २

दलित साहित्य व पुनरुत्थानाच्या चळवळी, नकार, विद्रोह आणि साहित्य, वर्गीय जाणिवा

प्रमाणभाषा, ग्रंथभाषा आणि बोली, दलित साहित्य व सामाजिक बांधिलकी, विज्ञाननिष्ठता, आधुनिकता

दलित साहित्याचे वेगळेपण, रूपकात्मक, देशीपण, स्वतंत्र सौंदर्यशास्त्र हवे का ?

दलित साहित्यातील बदल, वेदना विद्रोह यांचे चित्रण.



संदर्भ ग्रंथ :

१ ग्रामीण साहित्य : स्वरूप आणि समस्या	डॉ. आनंद यादव
२ ग्रामीण कथा	डॉ.वासुदेव मुत्ताटे
३ ग्रामीण साहित्य प्रेरणा आणि प्रयोजन	डॉ. श्रीराम गुदिकर
४ ग्रामीण साहित्य	डॉ. रा.रं. बोराडे
५ मराठी कादंबरीतील प्रादेशिकता	डॉ.भास्कर शेटके
६ ग्रामसंस्कृती	डॉ.आनंद यादव
७ ग्रामीण कादंबरी	डॉ. रवींद्र ठाकूर
८ ग्रामीण साहित्याची चळवळ	डॉ. कीर्ती मुळीक
९ ग्रामीण साहित्य आणि वास्तव	संपा. डॉ. कृष्णा इंगोले
१० ग्रामीण साहित्यातील स्त्रीचित्रण	डॉ. बाबुराव उपाध्ये
११ ग्रामीण -दलित साहित्य:चळवळ आणि समीक्षा	डॉ. मधुकर मोकाशी
१२ ग्रामीण साहित्य : प्रवाह आणि परिस्थिती	डॉ. वामन जाधव
१३ ग्रामीणता : साहित्य आणि वास्तव	डॉ. आनंद यादव
१४ मराठी साहित्य : समाज आणि संस्कृती	डॉ. आनंद यादव
१५ ग्रामीण साहित्य : एक चिंतन	डॉ. द. ता. भोसले



यासाठी १५ व्याख्याने घ्यावीत व एक श्रेयांकन देणे (1Credit)

घटक ३

दलित साहित्यातील कविता, आत्मचरित्रे, कथा, नाटक, कादंबरी,
अविडकरी, शाहिरी वाङ्मय इ. वाङ्मयप्रकारांची विकासात्मक वाटचाल ,
१९४५ ते १९६० दलित साहित्यच्या समीक्षेचे स्थूल स्वरूप.
१९६० नंतर दलित साहित्यच्या समीक्षेचे स्थूल स्वरूप.

यासाठी १५ व्याख्याने घ्यावीत व एक श्रेयांकन देणे (1Credit)

घटक ४

आशय, अनुभव, रचना, भाषाशैली, साहित्य, समीक्षा यासंदर्भात दलित साहित्याने दिलेले योगदान.
दलित चळवळीच्या संदर्भात दलित साहित्याने दिलेले योगदान .
दलित साहित्य आणि विज्ञाननिष्ठा.
दलित साहित्याचा आस्वाद व आकलन.

- या सत्राशेवटी अंतर्गत परीक्षा घेण्यात यावी ती एकूण ५० गुणांची असेल.
त्यासाठी पुढील परीक्षापैकी कोणत्याही दोन स्वरूपाच्या परीक्षा घ्याव्यात.

क्रमांक	परीक्षा	विषय
१	गृहपाठ	एका घटकावर प्रश्न देणे
२	मौखिक परीक्षा किंवा स्पर्धा परीक्षा	चार घटकावर प्रश्न विचारणे
३	सादरीकरण	वरीलपैकी कोणत्याही एका घटकावर सादरीकरण
४	प्रकल्प किंवा संशोधन	दिलेल्या घटकावर प्रकल्प सादर करणे
५	लेखी परीक्षा	कोणत्याही एका घटकावर

दोन क्रेडीटसाठी वरील पैकी कोणत्याही दोन गटातील परीक्षा देणे आवश्यक राहिल.
प्रत्येक क्रेडीट २५ गुणांसाठी असेल. (25 + 25 = 50)



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मानव-सिद्धांत विभाग

प्रो. रजनीश जैन
सचिव

Prof. Rajnish Jain
Secretary



सत्यमेव जयते

विश्वविद्यालय अनुदान आयोग
University Grants Commission

(मानव-संसाधन विकास मंत्रालय, भारत सरकार)
(Ministry of Human Resource Development, Govt. of India)

बहादुरशाह जफर मार्ग, नई दिल्ली-110002
Bahadur Shah Zafar Marg, New Delhi-110002

Ph : 011-23236288/23239337

Fax : 011-2323 8858

E-mail : secy.ugc@nic.in

D.O.No.F.13-1/2000(EA/ENV/COS-I)

22nd May, 2019

Dear Sir/Madam,

This issues in supersession of earlier letter of even number dated 14th May, 2019.

As per directives of Hon'ble Supreme Court of India, a course on Environment should be implemented at all branches of Higher Education in India. The University Grants Commission had earlier passed instructions through numerous letters to all the universities/institutions to compulsorily implement Six Months Core Module Syllabus on Environmental Studies for under-graduate courses in all branches of higher education and also to create awareness among the students for preservation of environment which will go a long way for providing safe and healthy atmosphere for future generations.

You are once again requested to kindly ensure the implementation of Six Month Core Module Syllabus for Environmental Studies for under-graduate course (available on UGC website www.ugc.ac.in) in your University and affiliated colleges/institutes in case not implemented so far. The task of teaching the Module on Environmental Studies be entrusted with the teachers who fulfil the qualifications laid down by the UGC.

With kind regards,

Yours sincerely,

(Rajnish Jain)

The Vice Chancellor of all the Universities.

Copy to:

Publication Officer, UGC for uploading on UGC website.



(Rajnish Jain)

University of Pune



Abad Lodha
S. P. D. (Jr.) College
Chandwad
Tawant No. 404/04-05
Received on 23/12/04
Ganeshkhind,
PUNE - 411 007.

Telephone Nos. :
5696061
5690060
5690062
Telegraph : 'UNIPUNE'
Fax : 020-5693899
Ref. No. CBS/1003

Date: 15/7/2004

Circular No. 286 of 2004

Subject : Implementation of six months course entitled "A Course in Environmental Awareness"

It is notified for the information of all concerned that the University Authorities have decided to institute six month course entitled "A Course in Environmental Awareness" as enclosed in the appendix. (Syllabus, Evaluation Pattern and Guidelines for the conduct of the course are enclosed.)

The above decision will come into force from Academic Year 2004-2005.

The Head, Department of Environmental Studies, University of Pune, Pune - 7 and the Principals of all Affiliated Colleges are requested to bring the contents of this Circular to the notice of all concerned teachers and students.

for Director
B.C.U.D.

Copy to :

1. The Principals of all Affiliated Colleges.
2. The Department of Environmental Studies, University of Pune, Pune - 7

C:\My Documents\Makashi\Circular No 2.docD



Copy f.w.c.s. for, information to :

1. The members of the Management Council
2. The Dean, All Faculties
3. The Members of Board of Studies in
4. The Controller of Examinations
5. The Director, B.C.U.D.
6. The Director, Competitive Examination Center
7. The System Analyst, Data Processing Unit
8. The Deputy Registrar (Admission)
9. The Deputy Registrar (Examinations 1,2,3,4)
10. The Asst. Registrar (Examinations, Co-ordination Unit)
11. The Asst. Registrar (Examinations, S & T Unit)
12. The Asst. Registrar (Strong Room)
13. The Asst. Registrar (Admission)
14. The Asst. Registrar (Records & Meeting)
15. The Law Officer
16. The Public Relation Officer
17. The University Sub-Centers, Ahmednagar & Nasik
18. The Section Officer, Eligibility Section
19. The Section Officer, Affiliation Unit
20. The Section Officer, External Examination Center
21. The Section Officer, Approval Unit
22. The Section Officer, Examination Section B.A/B.Com./ B. Sc. Unit

Reference No. : AC / (B) 81 PA 81/2004

Dated : 21/22 / 5. 04

M.C. / 06 PV B-7 / 2004

Date 15-6-2004

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A Course in Environmental Awareness Syllabus

SECTION-I

Sr. No.	Topic	Sub-topics	No. of periods
1.	Nature & Scope of Environmental Studies	Definition scope, importance, Multi disciplinary nature. Need for public awareness	2
2	Natural Resources	Renewable & non-renewable Natural resources & associated problems of forest, water, mineral, energy, land & food - case studies, conservation of resources.	7
3.	Eco system	Types, characteristics, structure & function.	6
4	Biodiversity & its conservation	Definition: Genetic species & eco system diversity. Biogeographical classification of India. Biodiversity at global, national & local levels. conservation of biodiversity.	5

SECTION II

5.	Environmental Pollution	Definition course effects & control measures of air, water, soil marine noise, thermal nuclear. Role of an individual in prevention of pollution -case studies, Disaster management	7
6.	Social Issues & the environment	Urban problems, Resettlement problems, climatic change, global warming acid rain, ozone layer depletion, nuclear accidents, Air act, Environment Protection Act, water, forest wild life act, public awareness.	5
7.	Human Population & environment	Population - explosion, Family Welfare Programme, Environment & Human Health, Human Rights, Value Education, HIV/AIDS, Role of I.T. in Environment & human health - case studies.	4
8.	Fieldwork	Visit to a local area- urban, rural, industrial, agricultural, study of simple eco system-pond, river, hill etc	4

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List of Reference Books.

1. A text Book of environmental Sciences – S.S. Purohit shammi & A.K. Agarwal
2. The Biodiversity of India- Bharucha Erach
3. Marine Pollution – Clark R.S.
4. Down to Earth, Center for Science & Environment
5. Encyclopedia of Indian Natural History – (B.,N.H.S.) Hawkins R.E. Mumbai
6. Environmental Protection & Laws-Jadhav H. & Bosale V.M. (1995) Himalaya Pub. House, Delhi.
7. पर्यावरण शास्त्र – डॉ. खोलप टी. एन.
8. पर्यावरण शास्त्र – डॉ. करमरकर, प्रा. पागनीस, देवस्थळी, होईफोटे.
9. पर्यावरण शास्त्र – डॉ. घारपुरे.
10. पर्यावरण विज्ञान – प्रा. अहिरयवर् अलिद्दाड, वगट, घापटे, भोस.



4

University of Pune

"A Course in Environmental Awareness" (Compulsory at the B.A., B.Com., B.Sc. Degree Level)

Guidelines for the conduct of the course

1. A Certificate course in Environmental Awareness with duration of six months (40 lectures) has been introduced from the academic year 2004-05 at the second year of degree course (B.A., B.Com and B.Sc.) as a compulsory course
2. The syllabus prepared by the University is enclosed (see enclosure)
3. The details of the teaching plan are enclosed herewith
4. A proposed evaluation system has been enclosed
5. A Fee of Rs. 200 per student be charged to meet the expenditure on the conduct of the course. The Utilization of Rs. 200/- shall be as follows -
 - A. Rs. 50/- will be send to University of Pune.
 - B. Rs. 5/- each to Principal, Coordinator & Asstt. Coordinator per student.
- 6.a. A course Coordinator be appointed to organize teaching and evaluation.
- 6.b. Coordinator will be appointed by the Principal.
7. Faculty wise Asstt. Coordinator shall be appointed in multifaculty colleges.
8. **Qualifications of a Teacher.**
University approved teacher (Lecturer) in any subject possessing substantial knowledge to teach, courses on environmental studies shall be eligible to teach the proposed course.

Principal of the College shall be authorized to decide the eligibility of the teacher, based on published work or expository articles or books written by the teacher on environmental studies or workshop/refresher course/ training programme on environmental studies attended by the teacher,
9. A candidate has to appear for this course in the IInd year / IInd Terms of the degree course.



10 a. This course can be cleared in the IIIrd year also if candidate remains absent or fails in this course in the IInd year of degree course.

b. The candidate will have to pass in the examination of "A Course in Environmental Awareness" in order to obtain degree certificate from the University.

11. **Appointment of Examiner** : Principal shall appoint Chairman An examiner, paper setter, remuneration for Examination work shall be paid out of the fees mentioned above. The norms for payment shall be as follows.

A. MCQ Rs. 5/- *multiple choice question*

B. Essay type question Rs. 5/-

C. Field work Rs. 10/- per candidate

12. A candidate has to pass in this paper in order to obtain degree certificate. If the candidate passes in all subjects of degree course but fails in this paper, he will not obtain degree certificate.

13. This Scheme will start from academic year 2004-2005 for second year students of degree course.

14. **Examination** : The evaluation along the pattern suggested below shall be organized by the principal at the College level. The grade sheet shall be submitted to the Controller of Examination, University of Pune before the end of the University Examination's of B.A./B.Sc./B.Com. The grade shall reflect on the final Mark statement of each student. The results of University examination of the student who fail to get Minimum C Grade in this course shall be Kept in reserve till the concerned students complete the course and secure the required (Minimum) Grade.

A) Multiple Choice Question : 50 Marks

B) Essay type questions : 25 Marks

C) Field Works : 25 Marks

Total : 100 Marks Passing Marks : 40 Marks

Following Grades will be awards.

Grade O : above 75, Grade A : 61 to 75, Grade B : 51 to 60, Grade C : 40 to 50

15. **Administration Charges** : Principal will be authorized for sufficient administration charges which will include charges of the non-teaching staff, use of class rooms & other infrastructure of the College etc.



Ability Enhancement Compulsory Courses (AECC – Environmental Studies)

Unit 1: Introduction to environmental studies

- Multidisciplinary nature of environmental studies; components of environment – atmosphere, hydrosphere, lithosphere and biosphere.
 - Scope and importance; Concept of sustainability and sustainable development.
- (2 Lectures)

Unit 2: Ecosystems

- What is an ecosystem? Structure and function of ecosystem; Energy flow in an ecosystem: food chain, food web and ecological succession. Case studies of the following ecosystems:
 - a) Forest ecosystem
 - b) Grassland ecosystem
 - c) Desert ecosystem
 - d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)
- (6 Lectures)

Unit 3: Natural Resources: Renewable and Non-renewable Resources

- Land Resources and land use change; Land degradation, soil erosion and desertification.
 - Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.
 - Water: Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state).
 - Heating of earth and circulation of air; air mass formation and precipitation.
 - Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies.
- (8 Lectures)

Unit 4: Biodiversity and Conservation



- Levels of biological diversity :genetic, species and ecosystem diversity; Biogeography zones of India; Biodiversity patterns and global biodiversity hot spots
- India as a mega-biodiversity nation; Endangered and endemic species of India
- Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.
- Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.

(8 Lectures)

Unit 5: Environmental Pollution

- Environmental pollution : types, causes, effects and controls; Air, water, soil, chemical and noise pollution
- Nuclear hazards and human health risks
- Solid waste management: Control measures of urban and industrial waste..
- Pollution case studies.

(8 Lectures)

Unit 6: Environmental Policies & Practices

- Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture.
- Environment Laws : Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act; International agreements; Montreal and Kyoto protocols and conservation on Biological Diversity (CBD). The Chemical Weapons Convention (CWC).
- Nature reserves, tribal population and rights, and human, wildlife conflicts in Indian context

(7 Lectures)

Unit 7: Human Communities and the Environment



- Human population and growth; Impacts on environment, human health and welfares.
- Carbon foot-print.
- Resettlement and rehabilitation of project affected persons; case studies.
- Disaster management: floods, earthquakes, cyclones and landslides.
- Environmental movements: Chipko, Silent valley, Bishnios of Rajasthan.
- Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.
- Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi).

(6 Lectures)

Unit 8: Field work

- Visit to an area to document environmental assets; river/forest/flora/fauna, etc.
- Visit to a local polluted site – Urban/Rural/Industrial/Agricultural.
- Study of common plants, insects, birds and basic principles of identification.
- Study of simple ecosystems-pond, river, Delhi Ridge, etc.

(Equal to 5 Lectures)

Suggested Readings:

1. Carson, R. 2002. *Silent Spring*. Houghton Mifflin Harcourt.
2. Gadgil, M., & Guha, R.1993. *This Fissured Land: An Ecological History of India*. Univ. of California Press.
3. Gleeson, B. and Low, N. (eds.) 1999. *Global Ethics and Environment*, London, Routledge.
4. Gleick, P.H. 1993. *Water in Crisis*. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.
5. Groom, Martha J. Gary K. Meffe, and Carl Ronald carroll. *Principles of Conservation Biology*. Sunderland: Sinauer Associates, 2006.
6. Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. *Science*, 339: 36-37.
7. McCully, P.1996. *Rivers no more: the environmental effects of dams*(pp. 29-64). Zed Books.
8. McNeil, John R. 2000. *Something New Under the Sun: An Environmental History of the Twentieth Century*.



9. Odum, E.P., Odum, h.T. & Andrews, J.1971. *Fundamentals of Ecology*. Philadelphia: Saunders.
10. Pepper, L.L., Gerba, C.P. & Brusseau, M.L. 2011. *Environmental and Pollution Science*. Academic Press.
11. Rao, M.N. & Datta, A.K. 1987. *Waste Water Treatement*. Oxford and IBH Publishing Co. Pvt. Ltd.
12. Raven, P.H., Hassenzahl, D.M. & Berg, L.R. 2012. *Environment*. 8th edition. John Wiley & Sons.
13. Rosencranz, A., Divan, S., & Noble, M.L. 2001. *Environmental law and policy in India*. Tripathi 1992.
14. Sengupta, R. 2003. *Ecology and economics: An approach to sustainable development*. OUP.
15. Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi.
16. Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. *Conservation Biology: Voices from the Tropics*. John Wiley & Sons.
17. Thapar, V. 1998. *Land of the Tiger: A Natural History of the Indian Subcontinent*.
18. Warren, C.E. 1971. *Biology and Water Pollution Control*. WB Saunders.
19. Wilson, E.O. 2006. *The Creation: An appeal to save life on earth*. New York: Norton.
20. World Commission on environment and Development. 1987. *Our Common Future*. Oxford University Press.
21. www.nacwe.nic.in
22. www.opcw.org



ENVIRONMENTAL AWARENESS

Sr.No.	Year	S.Y.B.A.	S.Y.B.Com.	S.Y.B.Sc.	Total
1	2013-14	180	104	52	336
2	2014-15	214	103	101	418
3	2015-16	259	130	144	533
4	2016-17	202	164	169	535
5	2017-18	224	190	201	615
6	2018-19	222	173	183	578



75

S.N.J.B. ASHRAM'S
KKHA ARTS, SMGL COMMERCE & SPHJ SCIENCE SENIOR AND SPDS JUNIOR COLLEGE
 CHANDWAD

Page 1 of 8

Subject Wise Register (Single Subject) [For A.Y. 2013-2014]

Division: (All)

Class: S.Y.BA.

Medium: (All)

Division Type: G/NG/PNG

Paper Code:

Subject Code: 2014

Subject: Compulsory English

Member ID	Roll No.	Student's Name	Mother's Name	Gender	Caste Category	Fee Category	Last Exam %	Cell No.	Remark
404	1	AWARE SACHIN VALMIK	SHOBHA	Male	OPEN	E.B.C.	0.00		
422	3	BILLADE RAKESH DILIP	INDUBAI	Male	OBC	E.B.C.	0.00		
424	4	BODHARE SIDHANT SUBHASH	MANDABAI	Male	SC	E.B.C.	0.00		
431	5	CHAVAN MANISHA ONKAR	TARABAI	Female	NT(C)	E.B.C.	0.00		
453	7	GANGURDE RAJENDRA RATAN	LILABAI	Male	OBC	E.B.C.	48.33	7767935788	
454	8	GANGURDE SANTOSH BHAUSAHEB	MANGALA	Male	OPEN	E.B.C.	43.66	9689228267	
462	11	GUNJAL YOGITA UTTAM	MANDA	Female	OBC	E.B.C.	74.00	9850894519	
473	12	JADHAV MANISHA KAILAS	SHOBHA	Female	OPEN	E.B.C.	0.00		
484	14	JADHAV SANDIP RAJARAM	INDUBAI	Male	OPEN	E.B.C.	40.66	9272456382	
468	15	JADHAV CHETAN RAGHUNATH	INDUBAI	Male	OPEN	E.B.C.	42.16	9890540392	
87	16	JADHAV YOGESHWAR SAHEBRAO	MANGAL	Male	OPEN	E.B.C.	45.83	9922295506	
497	18	KAHANDAL SAGAR VASANT	MIRABAI	Male	OPEN	E.B.C.	43.50	7798876799	
524	21	KUMBHARDE SANDIP SHIVAJI	ASHA	Male	OPEN	E.B.C.	49.00	8551991299	
114	22	KUMBHARDE VIKAS NANA	MANGALA	Male	OPEN	E.B.C.	50.83	8007406084	
521	23	KOTWAL KAPIL DATTATRAYA	ALKA	Male	OPEN	E.B.C.	40.83	9975201771	
519	24	KHUTE SANTOSH KEDU	SUNDA	Male	OBC	E.B.C.	55.00	8805101085	
118	25	MANDAL AJAY JAIKISAN	MEENA	Male	OPEN	E.B.C.	38.67	8390738625	
533	26	MANDALE MAHESH BABAN	HIRABAI	Male	OPEN	E.B.C.	44.16	9623818031	
540	28	NALAGE SANTOSH MANIK	ALKA	Male	OPEN	E.B.C.	50.17	7620086208	
541	29	NAVALE AMOL SHIVAJI	MIRABAI	Male	OPEN	E.B.C.	0.00		
551	30	NIRBHAVANE SARALA GAUTAM	AHILABAI	Female	SC	E.B.C.	56.83	9975524790	

