



शहीद महेन्द्र कर्मा विश्वविद्यालय, बस्तर

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क्रमांक / 738 / ब.वि.वि. / अका. / 2021
 प्रति,

जगदलपुर, दिनांक 02/09/2021

02 SEP 2021

1. प्राचार्य,
2. समस्त संबद्ध शासकीय एवं अशासकीय महाविद्यालय,
 विभागाध्यक्ष, समस्त अध्ययनशाला,
 शहीद महेन्द्र कर्मा विश्वविद्यालय, बस्तर,
 जगदलपुर, जिला-बस्तर (छ.ग.)

विषय :- सत्र 2021-22 में स्नातक भाग-तीन/तृतीय वर्ष/अंतिम के नवीन/संशोधित पाठ्यक्रम के संबंध में।

संदर्भ :- संयुक्त संचालक, उच्च शिक्षा संचालनालय, इन्द्रावती भवन, अटल नगर रायपुर का पत्र क्रमांक /2456/315/आउशि/सामन्वय/2019 दिनांक 16/05/2019 एवं विश्वविद्यालय का पत्र क्रमांक /5251/अका/ब.वि.वि./2019 जगदलपुर, दिनांक 03/07/2019 तथा पत्र क्रमांक /791/अका./ब.वि.वि./2020 जगदलपुर, दिनांक 09/11/2020

उपर्युक्त विषयान्तर्गत लेख है कि केन्द्रीय अध्ययन मंडल के प्रस्ताव अनुसार छत्तीसगढ़ शासन, उच्च शिक्षा विभाग द्वारा स्नातक स्तर के प्रथम वर्ष/भाग-एक, द्वितीय वर्ष/भाग-दो एवं तृतीय वर्ष/भाग-तीन के पाठ्यक्रमों में सत्र 2019-20 से परिवर्तन किया है। बस्तर विश्वविद्यालय, जगदलपुर के संदर्भित पत्र के माध्यम से संशोधित पाठ्यक्रम को सत्र 2019-20 में स्नातक स्तर के प्रथम वर्ष/भाग-एक एवं सत्र 2020-21 में स्नातक स्तर के द्वितीय वर्ष/भाग-दो के लिए लागू किये जाने की सूचना प्रेषित किया गया था।

सत्र 2021-22 में स्नातक स्तर के तृतीय वर्ष/भाग-तीन/अंतिम वर्ष के लिए नवीन/संशोधित पाठ्यक्रम को लागू किया गया है। शैक्षणिक सत्र 2021-22 प्रारंभ होने के फलस्वरूप वर्तमान सत्र में स्नातक स्तर के तृतीय वर्ष/भाग-तीन/अंतिम वर्ष के लिए नवीन/संशोधित पाठ्यक्रम अनुसार ही अध्ययन अध्यापन, परीक्षा, मूल्यांकन आदि कार्य सम्पादित करेंगे। स्नातक स्तर के प्रथम वर्ष/भाग-एक एवं द्वितीय वर्ष/भाग-दो के पाठ्यक्रम विगत सत्र के अनुसार यथावत रहेंगे।

पाठ्यक्रमों की एक प्रति महाविद्यालयों/अध्ययनशालाओं को ई-मेल के माध्यम से प्रेषित किया जा रहा है। साथ ही विश्वविद्यालय के वेबसाइट पर भी अपलोड कराया गया है, जिसका अवलोकन समस्त महाविद्यालय/अध्ययनशाला के शिक्षक एवं छात्र-छात्राएँ कर सकते हैं। भविष्य में छ.ग.शासन, उच्च शिक्षा विभाग अथवा उच्च शिक्षा संचालनालय द्वारा स्नातक स्तर के पाठ्यक्रमों के संबंध में किसी प्रकार का आदेश/निर्देश प्राप्त होने पर विश्वविद्यालय द्वारा यथासमय अवगत कराया जाएगा।

संलग्न :- उपरोक्तानुसार

कुलसचिव
 शहीद महेन्द्र कर्मा विश्वविद्यालय, बस्तर
 जगदलपुर, जिला-बस्तर (छ.ग.)

जगदलपुर, दिनांक 02/09/2021

पु.क्रमांक / 739 / ब.वि.वि. / अका. / 2021
 प्रतिलिपि :-

01. सचिव, छत्तीसगढ़ शासन, उच्च शिक्षा विभाग, मंत्रालय, महानदी भवन, नवा रायपुर अटल नगर, जिला-रायपुर की ओर सूचनार्थ प्रेषित।
02. आयुक्त, उच्च शिक्षा संचालनालय, ब्लॉक-सी 30, द्वितीय एवं तृतीय तल, इन्द्रावती भवन, नवा रायपुर अटल नगर, जिला-रायपुर की ओर सूचनार्थ प्रेषित।
03. माननीय कुलपति महोदय, शहीद महेन्द्र कर्मा विश्वविद्यालय, बस्तर जगदलपुर की ओर सूचनार्थ प्रेषित।
04. क्षेत्रीय अपर संचालक, उच्च शिक्षा, शासकीय काकतीय स्नातकोत्तर महाविद्यालय, जगदलपुर की ओर सूचनार्थ प्रेषित।
05. सहायक कुलसचिव, (गोपनीय/परीक्षा) शहीद महेन्द्र कर्मा विश्वविद्यालय, बस्तर, जगदलपुर को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।

सहायक कुलसचिव (अकादमिक)
 शहीद महेन्द्र कर्मा विश्वविद्यालय, बस्तर
 जगदलपुर, जिला-बस्तर (छ.ग.)

SULLABUS FOR ENVIRONMENTAL STUDIES

M.M. 100

UNIT-I THE MULTI DISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES

Definition, Scope and Importance

Natural Resources:

Renewable and Nonrenewable Resources :

Natural resources and associated problems.

- (a) Forest resources: Use and over-exploitation, deforestation, Case Studies, Timber extraction, mining, dams and their effects on forests and tribal people.
- (b) Water resources: Use and over-utilization of surface and ground water, floods drought, conflicts over water, dams benefits and problems.
- (c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources. Case studies.
- (d) food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging , Case studies.
- (e) Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources. Case studies.
- (f) Land resources: Land as a resource, land degradation, man induced landslides soil erosion and desertification.
 - Role of an individual in conservation of natural resources.
 - Equitable use of resources for sustainable life-styles.

UNIT-II ECOSYSTEM

Concept, of an ecosystems.

Structure and Function of and ecosystem

- Producers, consumers and decomposers.
- Energy flow in the ecosystem
- Ecological succession
- Food chains, food webs and ecological pyramids.
- Introduction, Types, Characteristics Features, Structure and Function of The following ecosystem:
 - a. Forest, Ecosystem.
 - b. Grassland ecosystem
 - c. Desert ecosystem
 - d. Aquatic ecosystems (Ponds, streams, lakes, rivers, oceans, estuaries)

UNIT – III Biodiversity and its Conservation

- Introduction – Definition : genetic, species and ecosystem diversity.
- Biogeographical classification of India.
- Value of biodiversity : consumptive use, productive use, social, ethical, aesthetic and option values.
- Biodiversity at global, national and local levels.
- India as mega diversity nation."
- Hot spots of biodiversity
- Threats to biodiversity : habitat loss, poaching of wildlife, man/wildlife conflicts.
- Endangered and endemic species of india.
- Conservation of biodiversity : In situ and Ex-situ conservation of biodiversity

UNIT-IV Environmental Pollution

Definition

- Causes, effects and control measures of
 - a. Air pollution
 - b. Water pollution
 - c. soil pollution
 - d. Marine pollution
 - e. Noise pollution
 - g. Nuclear hazards.
- Solid waste management : Causes, effects and control measures of urban and industrial
- Wastes.
- Role of an individual in prevention of pollution.
- pollution case studies
- Disaster management : floods, earthquake, cyclone and landslides.

Human Population and the Environment

- population growth, variation among nation,
- population explosion - Family Welfare programme.
- Environment and human health.
- Human Rights.

UNIT - V Social Issues and the Environment

- From Unsustainable to Sustainable development.
- urban problems related to energy.
- Water conservation, rain water harvesting watershed management.
- Resettlement and rehabilitation of people, its problems and concerns. Case studies.
- Environmental ethics : Issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion nuclear accidents and holocaust Case studies.
- Wasteland reclamation.
- Consumerism and Waste products. Environment Protection Act
- Air (Prevention and Control of pollution) Act.
- Water (Prevention and Control of pollution) Act.
- Wildlife protection Act.
- Forest Conservation Act.
- Issues involved in enforcement of Environment legislation.
- public awareness.
- Value Education
- HIV/AIDS
- Women and Child Welfare.
- Role of Information Technology in Environment and Human Health.
- Case Studies.

FIELD WORK

- visit to a local area to document environmental assets- river/forest/grassland/hill/mountain.
- visit to local polluted site : urban/Rural/Industrial/Agriculture. Study of common plants, insects, birds.
- Study of simple ecosystems-pond, river, hill slopes. etc. (Field work Equal to 5 lecture Hours)

**B.Sc. Part-II
BOTANY
PAPER-I
PLANT TAXONOMY, ECONOMIC BOTANY, PLANT ANATOMY AND EMBRYOLOGY**

- UNIT-I** Bentham and Hooker system of classification. Binomial Nomenclature, International Code of Nomenclature for Algae, Fungi, and plants (IUCN), Typification, numerical Taxonomy and chemotaxonomy. Preservation of Plant material and Herbarium techniques. Important botanical gardens and herbaria of India, Kew Botanical garden, England.
- UNIT-II** Systematic position, distinguishing characters and economic importance of the following families, Ranunculaceae, Magnoliaceae, Brassicaceae, Rosaceae, Papaveraceae, Caryophyllaceae, Rutaceae, Cucurbitaceae, Apiaceae, Rubiaceae, Apocynaceae, Asclepiadaceae, Solanaceae, Malvaceae, Convolvulaceae, Orchidaceae, Acanthaceae, verbenaceae, Lamiaceae, Asteraceae, Fabaceae, Euphorbiaceae, Poaceae and Liliaceae.
- UNIT-III** Economic Botany: Botanical name, family, part used and uses of the following economically important plants, fiber yielding plants: Cotton, jute, sun, hemp, coir. Timber yielding plants: Sal, Teak, Shisham and Pine. Medicinal plants: Kalmegh, Ashwagandha, Ghritkumari, Giloy, Brahmi, sarpgandha, ---of medicinal plants of C.G. Food plants: Pearl millet, Buck of wheat, Sorghum, Soyabean, gram, Ground nut, Sugarcane and Potato. Fruit plants: Pear, Peach, Litchi. Spices: Cinnamon, Turmeric, Ginger, Asafoetida and Cumin. Beverages : Tea, Coffee Rubber Cultivation of important flowers: Chrysanthemum, Dahelia, Biodiesel plants Jatropa, Pongamia Ethnobotany in context of Chhattisgarh.
- UNIT-IV** Plant Anatomy: Root and shoot apical meristems theories of root and shoot apex organization, permanent tissues, anatomy of root, stem and leaf of dicot and monocot, secondary growth in root and stem, Anatomical anomalies in the primary structure of stems (Nyctanthes, Boerhaavia, Casuarina). Anamolous secondary growth in Dracaena, Bignonia, Laptadenia.
- UNIT-V** Embryology: Flower as a reproductive organ, anther, microsporogenesis, types of ovules, megasporogenesis, development of male and female gametophyte, pollination, mechanisms, self-incompatibility, fertilization, endosperm, embryo, polyembryony, apomixes and parthenocarpy.

Books Recommended:

1. Singh, Pandey, Jain. **Diversity and Systematic of Seed Plants**, Rastogi Publications Merrut
2. Sharma OP, **Plant Taxonomy**, Tata Mc Graw Hill, New Delhi
3. Pandey BP, **Taxonomy of Angiosperms**, S. Chand Publishing, New Delhi
4. Pandey, BP, **Plant Anatomy**, S.Chand Publishing, New Delhi
5. Pandey, BP, **Economic Botany**, S.Chand Publishing, New Delhi
6. Bhojwani, SS and Bhatnagar SP, **Embryology of Angiosperm**, Vikas Publication House, New Delhi
7. Singh, Pandey, Jain, **Embryology of Angiosperms**, Rastogi Publication, Meerut
8. Sharma, V, Alum, A. **Ethnobotany**, Rastogi Publications, Meerut
9. Tayal, MS **Plant Anatomy**, Rastogi Publication, Meerut

Syllabus B.Sc. Part-II Botany Bastar University, Jagdalpur (C.G.)

**B.Sc. Part-II
BOTANY
PAPER-II
ECOLOGY AND PLANT PHYSIOLOGY**

- UNIT-I** Introduction and scope of ecology, environmental and ecological factors. Soil formation and soil profile, Liebig's law of minimum, Shelford's law of tolerance, morphological and anatomical adaptations in hydrophytes, xerophytes and epiphytes.
- UNIT-II** Population and community characteristics, Raunkiaer's life forms, population interactions (e.g. Symbiosis, Amensalism etc.), succession, ecotone and edge effect, ecological niches, ecotypes, ecads, keystone species
- Concept of ecosystem, trophic levels, flow of energy in ecosystem, food chain and food web, concept of ecological pyramids
- Biogeochemical cycles: carbon cycle, nitrogen cycle and phosphorus cycle
- UNIT-III** Plant water relations: Diffusion, permeability, osmosis, imbibitions, plasmolysis, osmotic potential and water potential, Types of soil water, water holding capacity, wilting, Absorption of water, theories of Ascent of sap, Mineral nutrition and absorption, Deficiency symptoms, Transpiration, stomata movement, significance of transpiration, Factors affecting transpiration, guttation.
- UNIT-IV** Photosynthesis: Photosynthetic apparatus and pigments, light reaction mechanism of ATP synthesis. C₃, C₄ CAM pathway of carbon reduction, photorespiration, factors affecting photosynthesis.
- Respiration: Aerobic and anaerobic respiration, Glycolysis, Krebs's cycle, factors affecting respiration, R.Q.
- UNIT-V** Plant growth hormones: Auxin, Gibberellins, Cytokinin, Ethylene and Abscissic acid. Physiology of flowering, Florien concept, Photoperiodism and Vernalization. Seed dormancy and germination, plant movement.

Books Recommended:

1. Koromondy, E.J. **Concepts of Ecology**, Prentice Hall, USA
2. Singh, JS Singh SP and Gupta SR. **Ecology and Environmental Science and Conservation**, S. Chand Publishing, New Delhi
3. Sharma, PD. **Ecology and Environment**, Rastogi Publications, Meerut
4. Hopkins, WG and Huner, PA. **Introduction to Plant Physiology**, John Wiley and Sons.
5. Pandey SN and Sinha BK, **Plant Physiology**, Vikas Publishing, New Delhi
6. Taiz, Land Zeiger. E. **Plant Physiology**, 5th edition, Sinauer Associates Inc. M.A, USA
7. Srivastava, HS **Plant Physiology and Biotechnology**, Rastogi Publications, Meerut