

**Program:** BCA

**Semester:** Sixth

**Course:** Technique of Artificial Intelligence

**Course Code:** 3C.351

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### Course Objective:

- Describe the key components of the artificial intelligence (AI) field and its relation and role in Computer Science;
- Identify and describe artificial intelligence techniques, including search heuristics, knowledge representation, automated planning and agent systems, machine learning, and probabilistic reasoning;
- Identify and apply AI techniques to a wide range of problems, including complex problem solving via search, knowledge-base systems, machine learning, probabilistic models, agent decision making, etc.;
- Design and implement appropriate AI solution techniques for such problems;
- Analyze and understand the computational trade-offs involved in applying different AI techniques and models.
- Communicate clearly and effectively using the technical language of the field correctly.

### Unit I:

Overview of A.I: Introduction to AI, Importance of AI, AI and its related field, AI techniques, Criteria for success. Problems, problem space and search: Defining the problem as a state space search, Production system and its characteristics, Issues in the design of the search problem Heuristic search techniques Generate and test, hill climbing, best first search technique, problem reduction, constraint satisfaction.

### Unit II:

Knowledge representation: Definition and importance of knowledge, Knowledge representation, Various approaches used in knowledge representation, Issues in knowledge representation Using Predicate Logic Representing Simple Facts in logic, Representing instances and is a relationship, Computable function and predicate.

### Unit III:

Natural language processing :Introduction syntactic processing, Semantic processing, Discourse and pragmatic processing Learning: Introduction learning, Rote learning, Learning by taking advice, Learning in problem solving, Learning from example-induction, Explanation based learning.

### Unit IV:

Expert System: Introduction, Representing using domain specific knowledge, Expert system shells. LISP and other AI Programming Language

### Suggested Reading:

1. E. Rich and K. Knight, "Artificial intelligence", TMH, 2nd ed., 1999.

**Program:** BCA

**Semester:** Sixth

**Course:** Environmental Studies

**Course Code:** 9.152

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### Course Objective:

- Now a days all regulatory bodies has given emphasis on environmental studies to save our environmental.
- In B.Tech course students are studying environmental study because in every aspect of their studies.
- They are studying about machine or land or water or space all are the important component of environment.
- The Environmental studies are based on intellectual property right (IPRs) have become important in a biodiversity-rich country like India to protect microbes, plant and animals that have useful genetic properties. Destruction of habitats, over-use of energy resource and environmental pollution has been found to be responsible for the loss of a large number of lives.
- It is feared that a large proportion of life on the earth may get wiped out in the near future.

### Unit I: Multidisciplinary nature of environmental studies, Natural Resources

Definition, scope and importance need for public awareness. (2 lecture)

Renewable and non-renewable resources: Natural resources and associated problems.

a) Forest resources: Use and over-exploitation, deforestation, case studies.

Timber extraction, mining, dams and their effects on forest 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, salinity, 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 lifestyles.

(2+8 lectures)

### Unit II: Ecosystems, Biodiversity and its conservation

- Concept of an ecosystem.

- Structure and function of an ecosystem.
- Producers, consumers and decomposers.
- Energy flow in the ecosystem.
- Ecological succession.
- Food chains, food webs and ecological pyramids.
- Introduction, types, characteristic 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)
- Introduction – Definition: genetic, species and ecosystem diversity.
- Bio geographical 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 a 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. (6 lectures + 8 lectures)

### **Unit III: Environmental Pollution, Social Issues and the Environment**

#### Definition

- Cause, effects and control measures of:-
  - a. Air pollution
  - b. Water pollution
  - c. Soil pollution
  - d. Marine pollution
  - e. Noise pollution
  - f. Thermal 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.
- 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 environmental legislation.
- Public awareness.

(8 lectures + 7 lectures)

**Unit IV: Human Population and the Environment, Field work**

- Population growth, variation among nations.
- Population explosion – Family Welfare Programme
- Environment and human health.
- Human Rights.
- Value Education.
- HIV/AIDS.

- Women and Child Welfare.
- Role of Information Technology in Environment and human health.
- Case Studies.
- Visit to a local area to document environmental assets-river/forest/grassland/hill/mountain
- Visit to a local polluted site-Urban/Rural/Industrial/Agricultural
- Study of common plants, insects, birds.
- Study of simple ecosystems-pond, river, hill slopes, etc. (6 lectures Field work Equal to 5 lecture hours)

***Suggested Reading:***

1. G. Kiely – Environmental Engineering Irwin/ McGraw Hill International Edition, 1997
2. M. L. Davis and S. J. Masen, Principles of Environmental Engineering and Science, McGraw Hill International Edition, 2004

**Program:** BCA

**Semester:** Sixth

**Course:** Human Values and Ethics

**Course Code:** 40B.451

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**Course Objective:** To develop students' sensibility with regard to issues of gender in contemporary India.

- To provide a critical perspective on the socialization of human beings.
- To introduce students to information about some key aspects of Indian culture and ethics.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.

#### **UNIT I: VALUE CRISIS IN CONTEMPORARY INDIAN SOCIETY**

- 1.1 Value Crisis at the Individual Level
- 1.2 Societal Level
- 1.3 Intellectual Level
- 1.4 Cultural Level
- 1.5 Value – What are they?
- 1.6 The Indian Concept of Values.
- 1.7 Modern Approach to the Study of Values.
- 1.8 Aesthetic Sensibilities

#### **UNIT II: MORAL AND ETHICAL HUMAN VALUES**

- 1.1 Bases for Moral Judgment
- 1.2 Some Canons of Ethics.
- 1.3 Virtue Ethics.
- 1.4 Ethics of Duty.
- 1.5 Ethics of Responsibility
- 1.6 Factors to be considered in Making Ethical Judgments.
- 1.7 Different Meanings of Human Values
- 1.8 A New Approach to Human Value, Freedom, Creativity Love & Wisdom

#### **UNIT III: MORAL VALUES IN PROFESSION**

- 3.1 What is a Profession?
- 3.2 Professional Ethos
- 3.3 Code of Professional Ethics
- 3.4 Practicing the Code
- 3.5 Corporate Social Responsibility
- 3.6 The Larger Domain of Human Values
- 3.7 Institutionalizing Ethics and Human Values

#### **UNIT IV: GENDER SENSITIZATION**

- 4.1 Socialisation of women

- 4.2 Just Relationships, being together as equals
- 4.3 Declining sex ratio, demographic consequences
- 4.4 Women's work, its politics and economics, fact and fiction, unrecognized and unaccounted work
- 4.5 Domestic violence, eve teasing and harassment. Is home a safe place?

### **Recommended Texts:**

- Dr. Rajan Mishra, Human Values: Laxmi Publications Pvt. Ltd.
- S. Dinesh Babu, Professional Ethics and Human Values; Laxmi Publications Pvt. Ltd.
- P.S. Rathore. Business Ethics And Communication; S.Chand Publishing
- Dr. K.Alex. Managerial Skills; S. Chand Publishing.
- Dr. M. Adithan, Study Skills For Professional Students For Higher Education , S.Chand Publishing
- Govindarajan M "Professional Ethics and Human Values."
- R.R. Gaur and R. Sangal " A Foundation Course in Human Values and Professional Ethics"

### **Websites:**

- [www.tatamcgrawhill.com/digital Solutions/ monopoly](http://www.tatamcgrawhill.com/digital%20Solutions/monopoly)
- [www.schandedutech.com](http://www.schandedutech.com)
- [www.laxmipublications.com](http://www.laxmipublications.com)

**Program:** BCA

**Semester:** Sixth

**Course:** Project

**Course Code:** 3C.395

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### **Course Objective:**

- The knowledge gained in previous courses are to be applied to a practical problem in various disciplines
- Demonstrate their ability to work independently and collaboratively
- Develop their abilities in problem solving and critical judgment
- Demonstrate their ability to effectively collect, analyze and organize scientific information
- Acquire written and verbal communication skills that allow them to communicate a convincing and reasoned scientific argument at a level and style appropriate to the audience.
- Contribute to group discussions on career preparedness and ethical and professional practice.