Established by Govt. of Arunachal Pradesh vide Act 9 of 2012, the Arunachal University of Studies Act, 2012 Recognized as

per u/s 2(f) of University Grants Commission Act, 1956 NH-52, Namsai, Arunachal Pradesh -792103

DIPLOMA (SAFETY MANAGEMENT- FIRE TECHNOLOGY) – PART ONE

Optional Early Certificate: - N/A

Syllabus:-

Sr. No.	Module Code	Name of Module	Credits	Total Marks
1	DSMF111	Professional Communication	4	100
2	DSMF112	Safety Management	5	100
3	DSMF113	Fundamental of Fire Engineering Science	5	100
4	DSMF114	Fundamental of Information Technology	4	100
5	DSMF115	Foundation Course in Environmental Science	4	100

Module Name: PROFESSIONAL COMMUNICATION

1. **Corresponding: (Official, Business and Personal):** One Letter from each category (Official, Business and Personal) may be set in the examination paper and the students be asked to write one of them.
2. **Grammar:** A brief review of easy form of tenses. Conversion of direct narration into indirect form of narration and vice versa (Only simple sentences). Punctuation.
3. **Essay:** Preferably on scientific topic from the given outlines. The paper setter may be instructed to give a choice of attempting one out of three topics. The question paper may provide the outlines. The essay will be of 250 to 300 words. The examiner may select three topics one from each of the following.
    - **Science**
    - **Technology**

- **General**

4. **Written Communication:** Report, Notices, Agenda Notes, Business Correspondence preparation of summery & prices.

Module Name: SAFETY MANAGEMENT

1. Electrical Safety
2. Energy Conservation
3. Personal Safety in Laboratory
4. Employee's Health and Safety
5. Fire Hazard & Protection
6. Safety for Home
7. Safety on Road
8. Hazard Evaluation Techniques
9. Training in Safety
10. Work Place Safety
11. Industrial Hazards
12. Road Safety
13. Implementing the Health and Safety Management System

Module Name: FUNDAMENTAL OF FIRE ENGINEERING SCIENCE

Unit I

History of fire service, Basic physics, Units, Guidelines for writing the units, Force, resultant force, Laws of force, Laws of motion, Mass and weight, work, power, energy, Law of conservation of energy, Mechanics – rest and motion, Distance and displacement, Speed and velocity, Acceleration, retardation, Acceleration due to gravity, Newton laws of motion, Machines and engines, Efficiency, Friction

Unit II

Basic Chemistry and physics of fire, Atomic structure, Elements, compounds, Pure substance and mixture, Physical and chemical changes, Condition for the changes, Energy changes, Effects of heat on matter, Combustion, Temperature, Specific heat capacity, Catalyst, Neutralization, Sublimation, Heat of decomposing, Chemical reaction, Exothermic reaction and endothermic reaction, Transmission of heat, Flash and fire point, Ignition temperature, Flammables and combustible chemicals, Spontaneous combustion, Triangle of combustion, Tetrahedron fire, Spread of fire.

Unit III

Classification of fire, General Causes of fire, Detection of fire, Extinguishing methods, First aid fire fighting equipment's, Fire bucket, Fire beater, hose real hose, Portable extinguisher, depends on weight, depends on operating method, depends on content, Depends on position of nozzle, Construction, Operation, Maintenance, Refilling

Unit IV

Fixed fire fighting installations using water, Hydrant or fire water system, Classification of hydrant system, Sprinkling system, Major foam pourer system, Steam drenching system, Emulsification, Special fires and fire fighting, Air craft fire, Ships fire.

Module Name: FUNDAMENTAL OF INFORMATION TECHNOLOGY

1. **Information Technology (IT) & Society:** Information, information processing & Information Technology. Evolution of IT. IT business and entrepreneurship, education, communication, entertainment, healthcare, agriculture, and its contribution to India's development. Government Initiatives: Particular initiatives – AADHAR, E-Panchayat, National Knowledge Network.

2. **Information Handling:** Devices assisting IT with special focus on Computers and Mobiles. Components of computer: Hardware and Software. Connecting and Configuring External Devices – like Printer, scanner, projectors etc. Hardware Connectivity Options – Ports, Wi-Fi, Bluetooth etc.
3. **Document Preparation & Presentation:** Document preparation and presentations using tables, pictures, graphs, animations, audio and video contents. Use of shortcut keys. Ways to make effective presentations. Use of references and citations. Document format and their conversion.
4. **Internet, Security & Legal Aspects:** WWW, Basics of webpage, Social network sites. Effective Searching. Popular Online Applications - e-ticketing, e-payment. Email & internet Forums. Issues – virus, malware, spam, phishing, copyright, plagiarism, cybercrime; Protective measures: password, https; Cyber Laws – IT Act. Open source philosophy. Licensing and domain of open source technology. Open source software development. Commonly used open source technologies.
5. **Library and Information Resource Centers:** E-Information Resources: Concept and types (e-books, e-journals, on-line databases: subscribed, free and open access databases). Institutional Repository: concepts, components. Library Systems – Introduction to library, Library and Information sciences (User and reference services , Current Awareness Service, Selective Dissemination of Information, Online Information Bulletin Board), Call Number (Class Number, Book Number, Location Number). Arrangement of Information Resources: Call Number (Class Number, Book Number, Location Number), On-line Public Access Catalogue (Data Fields and elements, search options, Reservation facilities). Bibliographic Standards for Citation – Modern Language Association Style, American Psychology Association style. Article Reference, Book Reference, Conference Reference, Web Resource Reference.

Module Name: FOUNDATION COURSE IN ENVIRONMENTAL SCIENCE

1. The Multidisciplinary nature of environmental studies Definition; Scope and importance, Need for public awareness.

2. **Natural Resources:** 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 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, 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.

3. **Ecosystems:**

   - 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).

4. Biodiversity and its Conservation

a. Introduction-Definition: genetic, species and ecosystem diversity.
b. Biogeographical classification of India.
c. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values.
d. Biodiversity at global, National and local levels.
e. India as a mega-diversity nation.
f. Hot-spots of biodiversity.
g. Threats to biodiversity: habital loss, poaching of wildlife, man-wildlife conflicts.
h. Endangered and endemic species of India.

Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

i.

5. **Environmental Pollution:**

- Causes, 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.

6. **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 environmental legislation.
- Public awareness.

7. Human Population and the Environment

- 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.

8. **Field Work (Practical)**

- 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.