49 FISHERIES RESOURCE MANAGEMENT

Unit 1: Fisheries Resources

Major fisheries resources of the world, global trends in production; Target and non-target fisheries resources of the Indian subcontinent and the EEZ; Distribution, composition, trends and dynamics of major exploited fishery resources in hill streams, rivers, reservoirs, lakes, lagoons, estuaries, territorial waters, oceanic waters, deep sea oceanic islands; Straddling/shared stocks and non-conventional resources; Major commercially exploited stocks, their potentials, status; Issues related to capture fisheries; Endangered and threatened species, in-situ and ex-situ conservation; Status and impact of exotic species, accidental introductions; Guidelines and policies for exotics.

Unit 2: Fish Biology and Stock Assessment

Biosystematics and Life history of economically important fish species; Food and feeding habits, methods of studying food and feeding habits, trophodynamics, feeding indices; Reproductive biology, maturity stages, fecundity, ova diameter studies and breeding cycles,developmental biology;Length weight relationship; Condition factor, gonado somatic index; Age and growth studies- method for determination of age, study of growth rates, direct and indirect methods; Fish migration, structures and design of fish passes; Taxonomy of major fish groups; Modern tools in ichthyotaxonomy;Concept of Stock and its characterization; Recruitment, growth and mortality of fish in natural water bodies.Different analytical and Holistic models for fish stock assessment, their advantages and disadvantages; Catch per unit effort; Concept of Maximum Sustainable Yield and Maximum Economic Yield; Applications of Remote Sensing(RS) and GIS in fisheries, resource mapping and forecasting;Mechanisms, methods and status of fish yield data acquisition; Ecosystem-based fisheries management tools:Productivity models, ECOPATH with ECOSIM; Monitoring, control and surveillance (MCS) systems for major fisheries; Computer softwares in stock assessment; Use of Virtual Population Analysis and Predictive models.

Unit 3: Fisheries Management and Responsible Fisheries

Concepts and principles of fisheries management; Fisheries Acts and Legislations, revisions and amendments; Fisheries policies, instruments and mechanisms for inland, coastal and open ocean fisheries management; Management of riverine, reservoir and lacustrine fisheries; Management of marine fisheries; Modes of fisheries management: Open access, regulated, advisory, participatory, user rights; International fishery regulations, treaties and instruments; Input control measures such as access control, size, type, number and power of boats, duration of fishing; Output control measures such as total allowable catch, catch quotas, licensing, technical control measures such as size limitations, closed fishing areas, closed seasons, size of nets and mesh size regulations, limited entry; Impediments to fisheries governance; UNCLOS, FAO Code of Conduct for Responsible Fisheries; Illegal unregulated and unreported fishing methods (IUU); Destructive and prohibited fishing systems and practices; Eco friendly fishing methods and fishing gears; Effect of fishing on nontargetspecies; Effect of bottom trawl on benthic fauna and habitats; Conservation methods issues and implications for biodiversity.

Unit 4: Fisheries Livelihood

Relevance of capture fisheries in food, nutrition, employment, income and livelihood securities of fishers; Vulnerability and marginalization of fishers, small scale processors and traders to changes in resource availability, diversification, exploitation and utilization patterns; Impact of dams, river linking and fisheries regulations on the fisher communities; Land and water body use issues in fisheries; Role of extension in fisheries, mechanisms and modes of extension and their impact on capture fisheries and fishers' livelihood, alternative livelihood options; Management of conflicts within sub-sectors in fisheries; Women in fisheries, status, role, impact, future; Vulnerability of fishers to natural disasters and coping mechanisms in disaster management; Block chain Technology; Fisheries co-operatives; Institutional support for fisheries development.