



Government of India  
Bhabha Atomic Research Centre  
Human Resource Development Division  
Training School Complex, Anushaktinagar, Mumbai-400 094



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Jan 29, 2024

**Sub:** Nominations for course on "Nuclear Reactor Project Management" under QUEST- Continuing Education Programme for employees of all DAE units

Human Resource Development Division (HRDD), BARC proposes to offer a course in **Hybrid mode** for employees of all DAE units under QUEST - Continuing Education Programme beginning from end of February, 2024 to end of May, 2024 (Twice a week for 3 - 3.5 Months) in BARC Training School Complex, Anushaktinagar, Mumbai. The course to be offered and the associated syllabus and tentative lecture schedule is given in the Annexure-I. A brief summary of the programme is given below.

### **QUEST - Continuing Education Programme: Details of the Course on "Nuclear Reactor Project Management"**

- The Course provides an overview of activities, management processes and integration & interface aspects in the implementation of the Projects. The lectures will include knowledge-based narratives, embedded with theoretical framework as well as experience / feedback inputs. It is intended to focus the discussions on each of the domains viz. Siting & pre-project activities, Design & Engineering, Procurement (supply chain), Construction, Commissioning and Quality Assurance in order to bring out role clarity to the participants having different backgrounds. Project financing and economics will also be covered briefly.
- The Course is, thus, expected to provide an impetus, in the overall perspective, to successful implementation of Nuclear Reactor Projects and other Projects of similar nature in the country.
- The course will comprise of about 30 lectures of 1.5 hours (1 hour and 30 minutes). There will be 2 lectures per week for the course. The lectures will be held at BARC Training School, Anushaktinagar tentatively from 4.30-6.15 PM (15 minutes break in-between). The exact timetable and schedule of course(s) to be offered will be notified later based on the nomination response received for the same.
- **The QUEST programme details can also be accessed through [hrdd.hbni.ac.in](http://hrdd.hbni.ac.in)**
- This course is offered **to the DAE employees** subject to approval from competent authority (Head of Division or equivalent within BARC & other DAE units).
- **For all DAE units, the details of QUEST programme and the Nomination form can be found at BARC website**

<http://www.barc.gov.in/careers/training.html>

- It is mandatory that the interested employees enrolled for the courses have a minimum of 80% attendance in the QUEST classes to be eligible to appear in the final written

examination. Kindly note that certificates will be issued only to those who appear in the written examination and score an aggregate of 50% or more in home/classroom assignments & written examinations taken together.

Kindly note that an employee needs to submit information pertaining to (i) field of work, and (ii) objective of pursuing this course in the application form.

Interested eligible employees of DAE may forward their applications/ nominations through their Division Head or equivalent competent authority as the case may be to, Quest Course coordinator, **Dr. Dimple Dutta, Head, DPIS, HRDD (dimpled@barc.gov.in) latest by 20<sup>th</sup> February, 2024 (Tuesday) to ensure programme implementation as envisaged above.**

**Kindly note that the course will be offered subject to the receipt of a minimum number of applications and decision of the coordinator/ Faculty concerned will be final in this regard.**

Thanking you all for continued cooperation.

  
29.01.24  
(A.K. Dureja)

Enclosed - Annexure-I: Details of the Quest Course and syllabus  
Annexure-II: Application-cum-Nomination form

To

All Unit Heads of DAE  
All Head of Divisions, BARC & Head of Independent Sections, BARC

Cc: Group Directors, BARC: For Kind information  
Associate Directors, BARC: For Kind information  
Dean, HBNI: For Kind information

डॉ. ए. के. दुरेजा Dr. A. K. Dureja  
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Training School Complex, Anushaktinagar, Mumbai-400 094

**Annexure-I**  
**Details of the Quest, Continuing Education Programme, Course**

<b>Course Title</b>	<b>Eligibility</b>	<b>Faculty / Associate faculty</b>
<b>Nuclear Reactor Project Management</b>	<i>DAE employee in the Grade of senior SO/D to SO/G</i>	<b>Faculty:</b> Shri A.K. Balasubrahmanian, Former Distinguished Scientist and Director (Technical), NPCIL

## **Course Content:**

- **Fundamentals and general principles of project management (1) \***  
*Projects- types, scales; key elements of project management*
- **Introduction to nuclear power projects (1)**  
*Importance of nuclear power, NPP types, status in India & world wide*
- **Nuclear power project characteristics (1)**  
*Typical characteristics- Gestation period, Safety, Regulatory & Statutory requirements, Cost*
- **Quality, Reliability, Safety Triad (2)**  
*Defense in Depth, Importance of Level 1 DiD, Quality and its attributes, Reliability basics, Reliability targets, Relation between quality, reliability & safety. Safety principles and processes to achieve safety*
- **Integrated view of nuclear power projects & overall planning for implementation (2)**  
*Understanding Nuclear Power Project wholistically, NPP stages from Siting to Commissioning & Operation Overview of stages and their interrelation Overall planning and need for integration*
- **Project Stakeholders (1)**  
*Identification of project stakeholders Addressing stakeholders' perceptions and needs*
- **Organisational Structure, Hierarchy (1)**  
*Organisational structure for project implementation Inter-relationship between Directorates / Groups Responsibilities*
- **Man power development and Training (1)**  
*Importance of quality manpower, Training needs Core competency*
- **Safety Culture, Project Culture (2)**  
*Safety culture concepts, attributes Project orientation, Role clarity, commitment*
- **Leadership, Communication (1)**  
*Attributes of good leadership (specific to industry) Importance of communication within the organization and motivation Public communication*
- **Different phases of project implementation (2)**  
*Detailed discussion on all phases of project implementation, Roles, time lines, responsibilities, Importance of each phase in the project implementation*



- **Project Cost and Time estimation (2)**  
*Elements of project cost,  
 Cost estimation methods  
 Cost optimization  
 Project time estimation  
 Benchmarking*
- **Project financing and economics (2)**  
*Sources of finance, financing models,  
 Economic viability, Concepts of Debt-Equity Ratio, IRR  
 Electricity tariff and elements of tariff,  
 Cost optimization and project implementation models*
- **Regulatory consents and Statutory clearances (1)**  
*Regulatory framework, Consenting stages,  
 Various Statutory clearances*
- **Site selection, site evaluation and pre-project activities (2)**  
*Basic requirements governing Site selection,  
 Site evaluation procedure,  
 Governing Codes/Guides,  
 Pre-project activities and their importance*
- **Design and Plant engineering (2)**  
*Design processes, design deliverables, time line,  
 Understanding Detailed engineering  
 3 D model and Plant engineering- concepts and their importance*
- **Supply chain management (2)**  
*Overview of equipment & Components and nuclear requirements,  
 Procurement packages,  
 Optimisation of packages,  
 Indian industry and indigenization,  
 Contracts and contract handling,  
 Time management*
- **Construction management (2)**  
*Overview of construction- buildings, equipment erection, piping etc,  
 Construction packages,  
 Requirements and processes,  
 Supervision and compliance to requirements,  
 Schedules and constraints*
- **Quality management (2)**  
*Quality- concepts and need,  
 Quality Assurance and Quality Control,  
 Quality Assurance Plan (QAP),  
 Processes and procedures*
- **Commissioning and operation (1)**  
*Commissioning stages, Procedures,  
 Plant Criticality to Full Power operation*
- **Project monitoring and control (2)**  
*Need for monitoring and control,  
 Methods of monitoring and control,  
 Project planning Tools  
 CPM/PERT, concept of Critical Path*
- **International outlook (1)**  
*International NPPs- overview, data and feedback*
- **Time overruns, cost escalation and methods of control (3)**  
*Importance of ensuring project completion on time and cost,  
 Causes of overrun*

*Cost escalation and money value of time,  
Advance planning and strategies,  
Seamless integration of activities,  
Alternate action plans and preparedness,  
Availability of project information and management intervention*

○ **Advances in construction time reduction (1)**

*Technical advances in manufacturing and construction (Fabrication innovation,  
Modular construction etc),*

*Digitisation of information and visual tools for supervision & monitoring*

○ **Lessons learned and good practices (2)**

*Experience feedback from domestic projects,*

*Feedback from international projects*

○ **Standardisation for rapid implementation (1)**

*Design standardization and Regulatory approvals,*

*Standardisation of specifications for manufacture and construction*

○ **Documentation and life management (1)**

*Importance of availability of project documents for life of the plant,*

*Digital systems for Document preparation, retrieval and storage,*

*Configuration control and document control*

○ **Summarising, Discussions, Assignments / Tests (3)**

[\* Numbers in bracket indicate number of lecture hours]