

CRITERION 1	Vision, Mission and Program Educational Objectives	50
Marks Claimed		50

1.1 State the Vision and Mission of the Department and Institute (5)

Claimed 5

About NIT Srinagar

National Institute of Technology, Srinagar is one of the premier Educational Institutes in the Northern Regions of the country. It was established in 1960 and has been one of the eighteen Regional Engineering Colleges sponsored by the Government of India during the second plan. The institute acquired the status of National Institute of Technology with deemed to be University status during August 2003 and attained full autonomy in its Academics.

The Institute is situated at the banks of world-famous Dal Lake, with the far-famed Hazratbal Shrine on another side of the campus. NIT Srinagar is a residential Institute with accommodation facility in Hostels and Staff-Quarters. There are four Boys and one Girls hostel which swallows about 1500 boys and 200 girls. Besides running the B. Tech. Programme the Institute also offers M. Tech programme in many streams. In addition to that, a large number of students are registered for M. Phil and Ph.D. Programmes.

Facilities and amenities are available at the institution such as Bank, Consumer cum Society, Shopping Complex, Recreational Centre, and Dispensary with Ambulance, Guest House, Students Activity Centre, Gymnasium, Internet Centre, Telephone Booths, Fax Services, Diesel Generator, and Bus Facility. The institution has an Industry Interaction Cell which was established in 1989 with the aim to remain at the fore-front on the scientific and technological development and to share its experience with industries in utilizing man-power and other resources are available at the institute effectively with the assistance of the participating industries. The institute has one of the best technical library in J&K state. It has a collection of over 60,000 books on engineering science and humanities and about 6,000 bound volumes/journals, both foreign and Indian. The library remains open from 9.00 am to 10 pm. It has online repository of A.S.C.E, A.S.M.E.A.E.L, and J.C.C.C etc in addition to journals through I.N.S.E.S, COMSORTIEM. It also has a collection of I.S.I codes, in the C.D-Rom format.

Vision of the Institute

To establish a unique identity of a pioneer technical Institute by developing a high quality technical manpower and technological resources that aim at economic and social development of the nation as a whole and the region in particular keeping in view the global challenges.

Mission of the Institute

- M1.** To create a strong and transformative technical educational environment in which fresh ideas, moral principles, research and excellence nurture with international standards.
- M2.** To prepare technically educated and broadly talented engineers, future innovators and entrepreneurs, graduates with understanding of the needs and problems of the industry, the society, the state and the nation.
- M3.** To inculcate the highest degree of confidence, professionalism, academic excellence and engineering ethics in budding engineers.

About the Chemical Engineering Department

Department of Chemical Engineering was established in the year 1963 for five year undergraduate programme with total student intake of 27. The duration of degree was changed later in the year 1981 to four years. Currently Department offers B.Tech and M.Tech degree programmes with total intake of 103 and 19 students respectively. Students are also pursuing their Ph.D. research under the guidance of faculty members of the Department. As we know Chemical engineering requires basic knowledge of chemistry, biology, physics, and mathematics, the course syllabus has been accordingly devised. The course schemes at B.Tech and M.Tech level include the fundamental subjects like; reaction engineering, thermodynamics, transport phenomena and mass transfer etc. A range of complementary elective courses also exists in the schemes. The students are rigorously trained and evaluated on a continuous basis in order to transform them into world class Chemical Engineers. The academic programme schemes have also been designed in tune with the requirements of the industry. The Department has well equipped laboratories to compliment the theoretical courses taught at graduate and post graduate level and to handle research in thrust areas like energy, environment, biotechnology and separation processes etc.

Vision of the Department

To be one of the leading Chemical Engineering Departments in the Country engaged with teaching, research and training of students with high moral values to solve the problems of Chemical and Allied industries for meeting the aspirations of society.

Mission of the Department

- M1.** To create and sustain the strong foundations of Chemical Engineering education, research and innovation.
- M2.** To produce well qualified, innovative Chemical Engineers with entrepreneurial skills & leadership qualities to face and solve the problems of industries and the society at large.
- M3.** To make professional leaders, academicians and engineers with high moral values and ethics.

1.2. State the Program Educational Objectives (PEOs) (5)

Claimed 5

Program Educational Objectives of the Department

- PEO1** : Providing broad-based Chemical Engineering education on the solid foundations of mathematics, basic sciences, engineering and social studies by choice based credit system.
- PEO2** : Enable the students to become future leaders in engineering practices for the overall betterment of society and instil in them a work culture based on foundations of ethics, scientific temperament and team work.
- PEO3** : Equip the students with knowledge, understanding and applications of Chemical Engineering tools for enabling them to pursue innovative research.
- PEO4** : Attain excellence in engineering and design through education in the principles and practices of Chemical Engineering.

1.3 Indicate where the Vision, Mission and PEOs are published and disseminated among stakeholders (15)

Claimed 15

Locations where the Vision, Mission, PEOs and PSOs are published:

Sr. No.	Location	Institute		Department			
		Vision	Mission	Vision	Mission	PEOs	PSOs
1.	Institute Website/ Departmental Webpage	✓	✓	✓	✓	✓	✓
2.	Department Notice Board	✓	✓	✓	✓	✓	✓
3.	Course file	✓	✓	✓	✓	✓	✓
4.	Lab Manual	✓	✓	✓	✓	✓	✓
5.	Conference workshop/Brochures	✓	✓	✓	✓		

Table B.1.3a

Locations where the Vision, Mission, PEOs and PSOs are disseminated:

Sr. No.	Location	Institute		Department			
		Vision	Mission	Vision	Mission	PEOs	PSOs
1.	Department Office	✓	✓	✓	✓	✓	✓
2.	HOD Room	✓	✓	✓	✓	✓	✓
3.	Class Rooms	✓	✓	✓	✓	✓	✓
4.	Laboratories	✓	✓	✓	✓	✓	✓
5.	Department Entrance	✓	✓	✓	✓	✓	✓
6.	Seminar/ Conference Hall	✓	✓	✓	✓	✓	✓
7.	Corridor	✓	✓	✓	✓	✓	✓

Table B.1.3b

Apart from this Vision, Mission, PEOs and PSOs are disseminated to all the stakeholders of the program through faculty meetings, student awareness workshops, student induction programs and placement and training activities at regular intervals.

List of stake holders of the program

1. Students.
2. Alumni.
3. Parents and Society.
4. Faculty and Staff Members.
5. Industries and Research Organisations.

1.4 State the process for defining the Vision and Mission of the Department, and PEOs of the program (15)**Claimed 15****Process for defining Vision and Mission of Department**

The Department established the Vision and Mission through a consultative process involving the stakeholders of the Department, the future scope of the department and the societal requirements as shown in Figure B.1.4a. In establishing the Vision and mission of the Department, the following steps were followed:

Step 1:	<i>The Vision and Mission statements of the Department were first proposed by the committee setup by the Department under chairmanship of Head of the Department keeping Vision and Mission of Institute in view.</i>
Step 2:	<i>Proposed Vision and Mission statements have been circulated among the stake holders.</i>
Step 3:	<i>Deliberations on the suggestions received regarding new draft of Vision and Mission statements were modified as per feedback received by stake holders.</i>

Step 4:	<i>The modified Vision and Mission of the Department were kept in front of the Departmental Faculty Board (DFB) for approval.</i>
Step 5:	<i>Departmental Faculty Board (DFB) approved the Vision and Mission Statements under the chairmanship of Head of the department.</i>

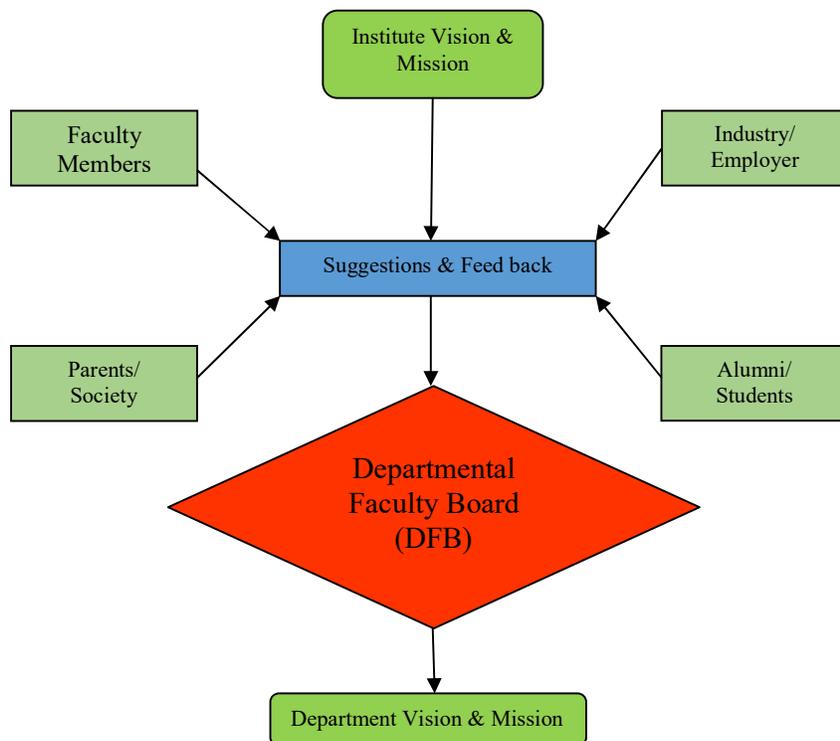


Figure B.1.4a: Process of Establishing Vision and Mission of the Department

Process for establishing PEOs

For defining the Program Educational Objectives (PEOs) of the Department, the following steps were followed (Figure B. 1.4b):

Step 1:	<i>The Program Educational Objectives (PEOs) of the department were first outlined by the committee setup by the Head of the Department keeping Departmental Vision and Mission, Institute Vision and Vision and Program Outcomes in view.</i>
Step 2:	<i>Proposed Program Educational Objectives (PEOs) have been circulated among the stake holders.</i>
Step 3:	<i>Discussion on the suggestions received regarding new draft of Program Educational Objectives (PEOs) statement were modified as per feedback received by stake holders.</i>
Step 4:	<i>The modified Program Educational Objectives (PEOs) were sent to the Departmental Faculty Board (DFB) for approval.</i>
Step 5:	<i>Departmental Faculty Board (DFB) approved the PEOs under the chairmanship of Head of the Department.</i>

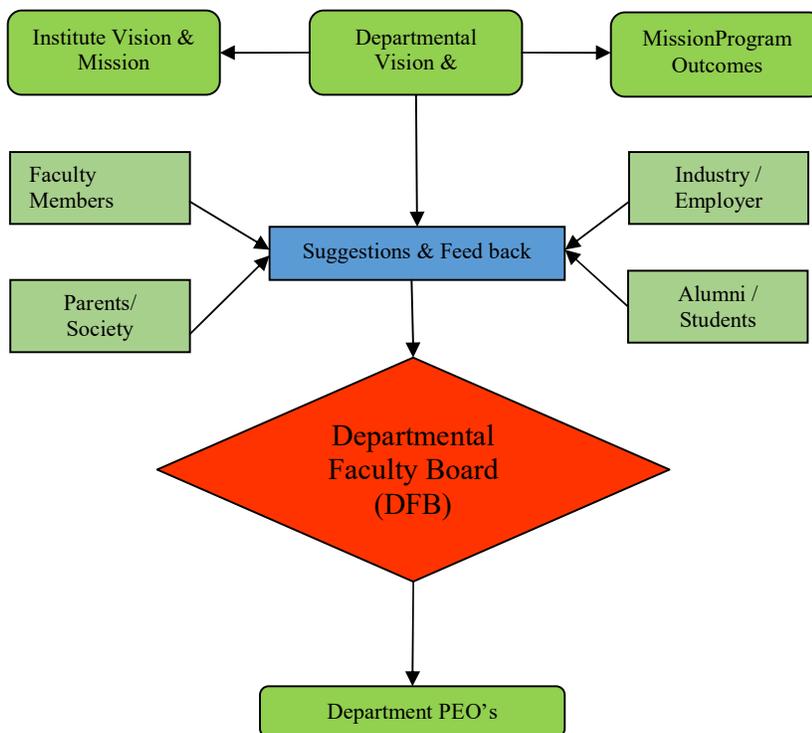


Figure B.1.4b: Process for defining the PEOs of the Department

1.5 Establish consistency of PEOs with Mission of the Department (10) Claimed 10

Mission Statements		M1	M2	M3
PEOs Statements 		To create and sustain the strong foundations of Chemical Engineering education, research and innovation.	To produce well qualified, innovative Chemical Engineers with entrepreneurial skills & leadership qualities to face and solve the problems of industries and the society at large.	To make professional leaders, academicians and engineers with high moral values and ethics.
PEO1	Providing broad-based Chemical Engineering education on the solid foundations of mathematics, basic sciences, engineering and social studies by choice based credit system.	3	2	3
PEO2	Enable the students to become future leaders in			

	engineering practices for the overall betterment of society and instill in them a work culture based on foundations of ethics, scientific temperament and team work.	2	2	3
PEO3	Equip the students with knowledge, understanding and applications of Chemical Engineering tools for enabling them to pursue innovative research.	3	2	2
PEO4	Attain excellence in engineering and design through education in the principles and practices of Chemical Engineering.	3	2	2

Table B.1.5**1:** Slightly related**2:** Moderately related**3:** Substantially related**Justification:****J1:**

1. **PEO1- M1:** Strong foundation of chemical engineering will be achieved through the basic knowledge of science
2. **PEO1- M2:** Problem solving skills will be developed by enriching the concepts of chemical engineering
3. **PEO1- M3:** Sound foundation promotes advance education

J2:

1. **PEO2- M1:** To carry out research for the betterment of society, the knowledge of basic chemical engineering is a must
2. **PEO2- M2:** Successful entrepreneurs will be produced by maintaining balance between scientific temperament and leadership skills.
3. **PEO2- M3:** Quality education and constructive environment are pre-requisites for higher education with moral values

J3:

1. **PEO3- M1:** Basic knowledge of chemical engineering will be applied for innovations
2. **PEO3- M2:** The industrial product quality will be improved through ignition of scientific temperament
3. **PEO3- M3:** Constructive environment translates students into excellent technocrats

J4:

1. **PEO4- M1:** Sound foundation is key to develop design skills
2. **PEO4- M2:** Quality education leads to better decision making and problem solving

3. **PEO4- M3:** Attaining excellence in chemical engineering principles and practices produces best engineers for society

1.5.1 Program Outcomes (PO), Program Specific Outcomes and their mapping with identified PEOs

<p>PEO'S →</p> <p>PO'S & PSOs</p> <p>↓</p>	<p>PEO1: Providing broad-based Chemical Engineering education on the solid foundations of mathematics, basic sciences, engineering and social studies by choice based credit system.</p>	<p>PEO2: Enable the students to become future leaders in engineering practices for the overall betterment of society and instill in them a work culture based on foundations of ethics, scientific temperament and team work.</p>	<p>PEO3: Equip the students with knowledge, understanding and applications of Chemical Engineering tools for enabling them to pursue innovative research.</p>	<p>PEO4: Attain excellence in engineering and design through education in the principles and practices of Chemical Engineering.</p>
<p>PO1. Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering Problems.</p>	3	3	2	3
<p>PO2. Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.</p>	3	3	3	3
<p>PO3. Design/Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.</p>	3	3	2	3

PO4. Conduct Investigations of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions for complex problems.	3	3	3	2
PO5. Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.	3	2	2	2
PO6. The Engineer and Society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.	2	2	2	2
PO7. Environment and Sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.	2	2	2	2
PO8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.	2	3	2	
PO9. Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.		3	3	
PO10. Communication: Communicate effectively on complex engineering activities with the	2	2	3	3

engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.				
PO11. Project Management and Finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.		3	3	
PO12. Life-long Learning: Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.	3	3	3	3
PSO1. Apply the principles and practices of Chemical Engineering discipline along with the basic sciences and humanities to solve the complex engineering problems concerning the issues of environment, safety, economics, culture and society etc.	3	3	3	3
PSO2. Acquire and apply the new knowledge with professional responsibility and ethics towards the advancement of academic and research pursuits in chemical and allied disciplines in the societal contexts.	2	3	3	2
PSO3. Design, develop and modify the chemical processes and to analyze these by applying the physicochemical and biological techniques.	3	2	3	3

Table B.1.5.1

1: Slightly related

2: Moderately related

3: Substantially related

Justification:**J1:**

1. **PO1 – PEO1:** Providing broad-based Chemical Engineering education will require the knowledge of mathematics, science, and engineering fundamentals.
2. **PO1 – PEO2:** Students to become future leaders will require the deep engineering knowledge.
3. **PO1 – PEO3:** understanding and applications of Chemical Engineering tools for enabling them to pursue innovative research necessary to know fundamentals like mathematics, science, engineering specialization to make the solution of complex engineering Problems.
4. **PO1 – PEO4:** Achieve excellence in engineering and design through education is extremely essential illumination of the knowledge gained.

J2:

1. **PO2 – PEO1:** Providing broad-based Chemical Engineering education will require the first principles of mathematics, natural sciences and engineering sciences.
2. **PO2 – PEO2:** Students to become future leaders will require the problem analysis
3. **PO2 – PEO3:** understanding and applications of Chemical Engineering tools for enabling them to pursue innovative research necessary to research literature, and analyze complex engineering problems
4. **PO2 – PEO4:** Achieve excellence in engineering and design through education is required to formulate, review research literature, and analyze complex engineering problems

J3:

1. **PO3 – PEO1:** Providing broad-based Chemical Engineering education will require Design solutions for complex engineering problems
2. **PO3 – PEO2:** Students to become future leaders will require development of the solutions
3. **PO3 – PEO3:** understanding and applications of Chemical Engineering tools for enabling them to design solutions for complex engineering problems
4. **PO3 – PEO4:** Achieve excellence in engineering and design through education is required to design and development of complex chemical engineering systems

J4:

1. **PO4 – PEO1:** Providing broad-based Chemical Engineering education will require research-based knowledge
2. **PO4 – PEO2:** Students to become future leaders will require to conduct investigations
3. **PO4 – PEO3:** understanding and applications of Chemical Engineering tools for enabling them to understand research methods including design of experiments, analysis and interpretation of data
4. **PO4 – PEO4:** Achieve excellence in engineering and design through education is required to synthesis of the information to provide valid conclusions for complex problems

J5:

1. **PO5 – PEO1:** Modern tools are required for providing broad-based Chemical Engineering education
2. **PO5 – PEO2:** Students to become future leaders to learn modeling to complex engineering activities with an understanding of the limitations.

3. PO5 – PEO3: understanding and applications of Chemical Engineering tools for enabling them to create, select, and apply appropriate techniques, resources, and modern engineering tools

4. PO5 – PEO4: Achieve excellence in engineering and design through education is required to use modern tools for complex engineering systems.

J6:

1. PO6 – PEO1: providing broad-based Chemical Engineering education to apply reasoning informed by the contextual knowledge

2. PO6 – PEO2: Students to become future leaders to understand the knowledge to assess societal, health, safety, legal and cultural issues

3. PO6 – PEO3: understanding and applications of Chemical Engineering consequent responsibilities relevant to the professional engineering practice necessary.

4. PO6 – PEO4: Achieve excellence in engineering understanding of societal, health, safety, legal and cultural issues and the consequent responsibilities is required

J7:

1. PO7 – PEO1: providing broad-based chemical engineering education to understand the impact of the professional engineering solutions

2. PO7 – PEO2: students to become future leaders to understand the impact of environmental and sustainability

3. PO7 – PEO3: understanding and applications of Chemical Engineering demonstrate the knowledge of, and need for sustainable development.

4. PO7 – PEO4: Achieve excellence in engineering find the pollution free solutions

PO8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

J8:

1. PO8 – PEO1: providing broad-based Chemical Engineering education include subjects related to professional ethics and responsibilities

2. PO8 – PEO2: Students to become future leaders need to be apply ethical principles and commit to professional ethics and responsibilities

3. PO8 – PEO3: professional ethics and responsibilities always helpful to become a good engineer

J9:

1. PO9 – PEO2: Students to become future leaders to understand the knowledge to assess societal, health, safety, legal and cultural issues

2. PO9 – PEO3: understanding and applications of Chemical Engineering consequent responsibilities relevant to the professional engineering practice necessary.

J10:

1. PO10 – PEO1: providing broad-based Chemical Engineering education to communicate effectively on complex engineering systems

2. PO10 – PEO2: Students to become future leaders to comprehend and write effective reports and design documentation.

3. PO10 – PEO3: understanding and applications of Chemical Engineering make effective presentations, and give and receive clear instructions.

4. PO10 – PEO4: Achieve excellence in engineering communicate effectively on complex engineering activities with the engineering community and with society at large

J11:

1. **PO11 – PEO2:** Students to become future leaders demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work
2. **PO11 – PEO3:** understanding and applications of Chemical Engineering to manage projects in multidisciplinary environments

J12:

1. **PO12 – PEO1:** providing broad-based Chemical Engineering education has the preparation and ability to engage in independent and lifelong learning
2. **PO12 – PEO2:** Students to become future leaders a lifelong learning in the broadest context of technological change is required.
3. **PO12 – PEO3:** understanding and applications of Chemical Engineering recognize the need for, and have the appropriate preparation
4. **PO12 – PEO4:** Lifelong learning helps to achieve excellence in engineering

J13:

1. **PSO1 – PEO1:** providing broad-based Chemical Engineering education apply the principles and practices of Chemical Engineering discipline
2. **PSO1 – PEO2:** Students to become future leaders to solve the complex engineering problems
3. **PSO1 – PEO3:** understanding and applications of Chemical Engineering issues of environment, safety, economics, culture and society
4. **PSO1 – PEO4:** Achieve excellence in engineering understanding the basic sciences and humanities to solve the complex engineering problems concerning the issues of environment, safety, economics, culture and society

J14:

1. **PSO2 – PEO1:** providing broad-based Chemical Engineering education to acquire and apply the new knowledge with professional responsibility
2. **PSO2 – PEO2:** Students to become future leaders to understand professional responsibility and ethics towards the advancement of academic
3. **PSO2 – PEO3:** understanding and applications of Chemical Engineering necessary to do research pursuits in chemical and allied disciplines in the societal contexts
4. **PSO2 – PEO4:** Achieve excellence in engineering understanding of the new knowledge with professional responsibility and ethics

J15:

1. **PSO3 – PEO1:** providing broad-based Chemical Engineering education to analyze and understand the interdisciplinary subjects
2. **PSO3 – PEO2:** Students to become future leaders to develop the new chemical engineering systems
3. **PSO3 – PEO3:** Design, develop and modify the chemical processes are broad areas of applications of Chemical Engineering
4. **PSO3 – PEO4:** Achieve excellence in engineering, design, develop and modify the chemical processes and to analyze these by applying the physicochemical and biological techniques