INDIAN INSTITUE OF TECHNOLOGY, ROORKEE

DEPARTMENTAL REVIEW TEMPLATE

1. **Name of Department/Center :** Center of Excellence : Nano Technology
2. **Reviewers :** (1) Dr. BHANU PANT, GD, MPRG, VSSC, ISRO, Trivandrum 695022

(2) Prof. Arun Chattopadhyay, IIT, Guwahati – 781 039

3. **Date of Review:** 19th July 2014

GRID FOR ASSESSMENT

NOTE:

i. Please grade in the box provided for the following parameters in the range of 1-10 with 10 being the highest.
ii. Leave 'blank' for 'No Comment'.
iii. Kindly give your opinion on the strength and weakness of the Department/ Center and your suggestions for future growth.

I. ACADEMICS

I.1	Undergraduate	Score
1.	Curriculum i. Curricular Structure ii. Course Syllabi iii. Flexibility	
2.	Formal Academic Load on Students i. Teaching ii. Laboratory/Practical iii. Projects(minor/major)	
3.	Evaluation Process i. Continuing Evaluation ii. Mid-term Evaluation iii. End-term Evaluation	

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4.	Academic Ambience	
5.	Opportunity for Peer-Based Learning	
6.	Opportunity for Further Learning(Breadth and Depth) i. Elective Courses Specialization ii. Minor with Major Discipline iii. Honors Programme in Major Discipline	
7.	E-Assisted Learning i. Availability of Library Resources and Major Search Engines (like Scopus, Web of Science) ii. Multi-Media Assisted Teaching	
8.	In –Curriculum Research/Exploration Opportunity to Students	
9.	Technical Societies/ Colloquium for Students i. Departmental Society ii. Student Chapter(s) of Professional Societies	
10.	Faculty –Student Interaction	
11.	Faculty Mentoring of Students	
12.	Faculty Advisor System for Students/Class of Students	
13.	Self Study Courses for Student	
14.	Effective Teaching Mechanism for Enhanced Number of Students in Various Classes	
15.	Effectiveness of Assisted Learning: Tutorial System for B.Tech Students/ Seminars	

I.2	**Graduate Programmes (Masters)**	**Score**
1.	Curriculum i. Curricular Structure ii. Course Syllabi iii. Flexibility	08 09 09 — 8.67 ✓
2.	Formal Academic Load on Students i. Teaching ii. Laboratory/Practical iii. Seminar/Dissertation	09 08 09 — 8.67 ✓
3.	Evaluation Process i. Continuing Evaluation ii. Mid-Term Evaluation iii. End-Term Evaluation	09 09 09 — 9.00 ✓
4.	Academic Ambience	08 ✓
5.	Opportunity for Peer-Based Learning	08 ✓
6.	Opportunity for further Learning(Breadth and Depth) Elective Courses (Specialization Electives)	08 08
7.	E-Assisted Learning i. Availability of Library Resources and Major Search Engines (like Scopus, Web of Science)	09 ✓

	ii. Multi-Media Assisted Teaching	09
8.	In –Curriculum Research/Exploration Opportunity to Students	07
9.	Technical Societies/ Colloquium for Students i. Departmental Society ii. Student Chapter(s) of Professional Societies	09 –
10.	Faculty –Student Interaction	08
11.	Faculty Mentoring/Supervising of Students	09
12.	Faculty Advisor System for Students/Class of Students	09
13.	Effectiveness of Assisted Learning: Home Assignments/Seminars/Presentations	09

I.3	**Doctoral (Ph.D) Programmes**	**Score**
1.	Pre-Ph.D Courses and Evaluation Process	09
2.	Comprehensive Courses Examination	09
3.	Breadth and Depth of Knowledge of Students	08
4.	Seminar/ Presentations and Technical Communication	08
5.	Average No. of Research Students/Faculty	08
6.	Average No. of Research Papers of Ph.D Students	09
7.	Average Duration to Complete Ph.D (years)	09

II. RESEARCH

		Score
1.	Research Ambience in the Department	08 ✓
2.	Research Awareness among Doctoral Students	09
3.	Competence Level of Doctoral Students for Research	09 ✓
4.	Quality of Research	09
5.	Quality of Publications	08
6.	Impact of Publications	08
7.	Relevance of Research to Knowledge Generation	08
8.	Societal Relevance of Research	08
9.	Exposure of Researchers to the International State of Art	09
10.	Student Exposure to Attending Quality Conferences/Symposia	09
11.	Growth in Ph.D Programme	09
12.	Quality of Research Infrastructure	08
13.	Utilization of Existing Research Infrastructure	09
14.	Department Initiative on Faculty Hiring	–
15.	Breadth and Depth of Research in the Department	08
16.	Research Intensity of Faculty Members	09

Futuristic Areas For Hiring Faculty Members	NEMS and MEMS areas
Research Areas for Improvement	Micro & nanofabrication, sensors and actuators research may be taken up.

Comments (not more than 100 words for each given below)

Strength: Students & faculty are very enthusiastic about pursuing the research in the latest area of the field. Areas like microwave absorbing materials, nanocatalysts, e-waste management and water-purification and surface ~~area~~ coatings are doing well.

Weakness:

(1) There is a great need for fabrication infrastructure.
(2) A sustainable model to be worked out for making maximum number of courses from desciplines from various departments available to students.

Suggestions for improvement:

Maintenance of equipments should be high priority. This can be ~~fulfilled~~ addressed by ~~high~~ hiring skilled-technical staff (There is no Technical staff at the Center presently)

III. Infrastructure

Departmental / Center

		Score
1.	Adequacy of Class Rooms and Multi-Media Facility	07
2.	Availability of Laboratories	07
3.	Availability of Conference/Seminar Room, etc.	06
4.	Availability of Seating Space for Research Students	07
5.	Availability of Internet Services in Research Labs and Class Rooms	09
6.	Departmental Library and E-Resources	08
7.	Computing Facilities and Software	08
8.	Adequacy of Offices and Furnishing for Faculty	06
9.	Faculty- Student Ratio	06

10.	Support Staff (Technical/Administrative) Adequacy	06

Comments (not more than 100 words for each given below)

Strength: Available infrastructure is maximally utilized.

Weakness: (1) Inadequate space (2) Inadequate Center operating grant (3) Characterization facilities like FESEM, TEM, AFM are necessary

Suggestions for improvement:

(1) Additional space may be created
(2) Sustained funding for laboratory maintenance is necessary

IV. Admissions of Ph.D Students

		Score
1.	Intake of Ph.D Students	09
2.	Admission Process	08

Suggestions:

The Center is doing well as far as PhD student intake is considered.

V. Outcomes

		Score
1.	Placements i. Placement of B.Tech/IDD Students ii. Placement of Masters Student iii. Placement of Ph.D Students	— 08 08
2.	Average No. of Ph.D.s Awarded per Year	07
3.	Publications per Faculty in ISI Indexed Journals/Year	08
4.	Average Citations per Faculty/Year (Last-Three Years) (Web of Science/Scopus)	
5.	Recognitions; Awards(National/International) to Faculty/Students	07
6.	Consultancy and Projects	07
7.	No. of Ph.D. graduates who took Academics as Career (Based on Data of Last 5 Years)	08

8.00

Comments and Suggestions for improvement:

① The Center is growing at a rapid pace in recent years. It needs to consolidate further research infrastructure, equipment, technical staff and versatile courses.

② A model may be worked out such that the faculty can participate & teach at Center without being overloaded with parent departmental academic load. Concept like Adjunct Faculty or Joint Faculty appointment may be considered.

Date:

19th July 2014

(Signature of the Reviewer)

① Dr BHANU PANT, VSSC, Trivandrum

② Prof. ASUM Chattopadhyay, IIT GUWAHATI

(Name and Address of the Reviewer)