



Dayalbagh Educational Institute

Faculty of Science



A Brief Profile and Progress Report (2013-2019)



Faculty Vision and Mission

In sync with National, NAAC and Institute's Vision and Mission

National Missions

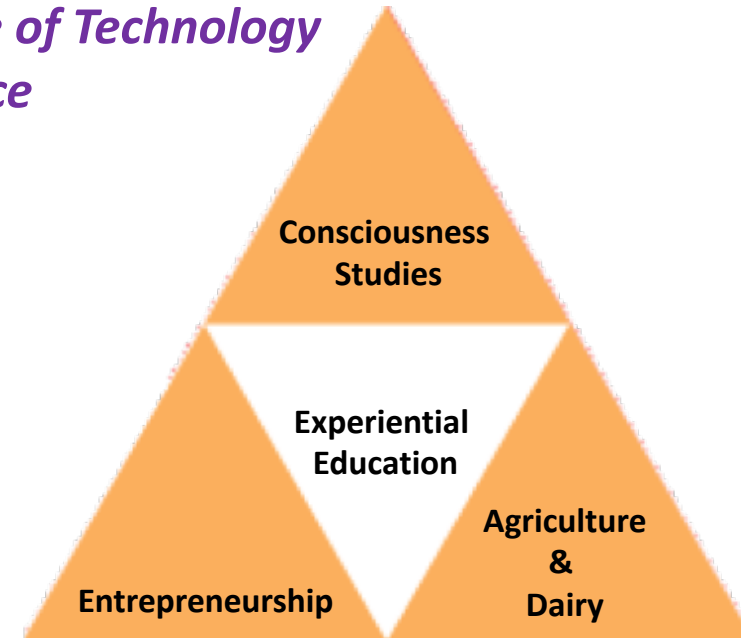
- *Skill India*
- *Make in India*
- *Digital India*
- *Swachh Bharat*
- *Women Empowerment*

NAAC Core Values

- *Contributing to National Development*
- *Fostering Global Competencies among Students*
- *Inculcating a Value System among Students*
- *Promoting the Use of Technology*
- *Quest for Excellence*

DEI

- *Excellence through Value-based Education and Total Quality Management*
- *A Complete Well-rounded Total Quality Person*



All Departments are working towards the fulfilment of this VISION



Brief Profile

Faculty of Science : 5 Departments

- | | | |
|--|--------------------|-----------------|
| 1. Botany | UGC-SAP-I | |
| 2. Chemistry | UGC-SAP-II | DST-FIST |
| 3. Mathematics | | DST-FIST |
| 4. Physics & Computer Science | UGC-SAP-III | DST-FIST |
| 5. Zoology | | DST-FIST |

Common Programmes Offered

B.Sc. (Hons.), M.Sc., M.Phil. and Ph.D.

Annual Review of Syllabus - Board of Studies with external experts



Brief Profile

Well Qualified, Experienced and Dedicated Faculty

Teaching Staff

- 64 Ph.Ds. (80 %)**
17 pursuing Ph.D.
- 47 % Women**

Designation	No.	Programme	No. of Students
Professors	23	B.Sc. (Hons.)	587
Associate Professors	08	B.Voc.	484
Assistant Professors	24	M.Voc.	27
Emeritus Professors	03	M.Sc.	168
Guest Faculty	23	PG Diplomas	19
Total	81	M.Phil.	02
		Diploma	33
		PhD	141
		Total	1461

- Teaching Staff : 81
- Non-Teaching Staff : 33
- No. of Students : 1461
- Teacher-Student Ratio : 1 : 18

Session : 2018 - 2019

Women Enrolment : 70%
Reservation : As per Govt. norms



Awards and Recognitions

Faculty : 89

Students : 103

(Awards, Best Papers, Visiting Scientists, Young Scientists, Invited Talks, etc.)



Awards and Recognitions : Faculty

Recognitions : Fellows

1. International Professional Societies

- *Royal Society of Chemistry, UK*
- *Royal Entomological Society, London*
- *Royal Astronomical Society, London*
- *International Association for Hydrogen Energy, USA*

2. National Bodies

- *National Academy of Sciences, Allahabad (NASI)*
- *Indian National Academy of Engineering (INAE)*
- *Indian Society for Nuclear Technique in Agriculture & Biology*
- *Institution of Electronics and Telecommunication Engineers (IETE)*



Awards and Recognitions : Faculty

Recognitions

Members of Editorial Boards of Journals : 24

(IEEE Access, J. Optics and Photonics, Guest Editor, NASI Letters)

Members of Review Boards of Journals : 65

Nano Energy

Electrochimica Acta

Applied Catalysis B: Environmental

Journal of Hazardous Materials

ACS Applied Material and Interface

RSC Advances

Nanoscale

Nanophotonics

Optics Express

IEEE Photonics

Chemical Physics

Nature Communications

Atmospheric Research

Science of the Total Environment

International Journal of Hydrogen Energy

Environmental Pollution

Environmental Science and Pollution Research

J. of Photochem. & Photobiol. B: Biology

Dyes and Pigments

IEEE Trans. Neural Networks

Intl. J. Hydrogen Energy

Photonics Journal

Consultancy

ADRDE, DRDO, Agra

Saran Ashram Hospital

Saveer Bio, Greater Noida

Beejo Sheetal

Dayalbagh Agricultural Farms

Children's Science Centre, Dayalbagh

Nirma Seeds

Jain Irrigation, Jalgaon



Awards and Recognitions: Students

International Research and Visiting Fellowships

- 1. Udit Tiwari, Marie Sklodowska-Curie Postdoctoral Research Fellowship (RESPIRE), University of Central Lancashire, UK, 2019.**
- 2. Anupam Srivastava, Bhaskara Advanced Solar Energy (BASE) Internship Program supported by DST and IUSSTF, University of Utah, USA, 2017.**
- 3. Nirat, Doctoral Fellowship, Univ. of Maryland, College Park, USA, 2017.**
- 4. Saatviki Gupta, EPSRC Global Challenges Research Fund Institutional Sponsorship Award, Univ. of Liverpool, UK, 2016.**
- 5. Aadesh P. Srivastava, Researcher, Chalmers University of Technology, Gothenburg, Sweden, 2016.**
- 6. Saatviki Gupta, DST-IUSTF Bhaskar Advanced Solar Energy Fellowship, University of Texas at Austin, USA, 2014.**
- 7. B. Binathi, CERN Openlab Summer Student Fellowship, Geneva, 2014.**



Awards and Recognitions: Students

2014 Roopa Rani Best M.Phil Thesis:
Association of Separation Scientists and Technologists



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2015 Kiran Singh
Young Scientist Award under
Department of Higher Education,
Uttar Pradesh



Pratima Gupta receiving ISCA Young Scientist award from Hon'ble Nazma Hepatullah, Governor of Manipur, 2018

2016 Puneet Kumar Verma IASTA-2016, PRL,
Ahmedabad



Ms. Anamika Banerjee, red catalyst
via ph
ICANN, 2017

2018



Bhaskara Advanced
Solar Energy (BASE)
Internship
Program supported
by DST and IUSSTF

2017
Ms. Sonal Kumari
(INTROMET 2017)



Ms. Rohini Singh



Ms. Pooja Chahar,
ESW Khajuraho



Mr. Saurabh Yadav
NSTC Nanotech, Delhi



Awards and Recognitions: Students



Team DEI won the Bronze Medal at MIT, USA for International Genetic Engineering Competition (iGEM) funded by DBT 2017

Project: Biobeads expressing heavy metal binding protein for removal of heavy metal toxicity from waste water



Awards and Recognitions: Students

Fellowships

- *DST-INSPIRE Faculty Award* : 02
- *DST-INSPIRE Fellowship* : 14
- *CSIR-SRF* : 06
- *UGC BSR Fellowships* : 16
- *Summer Research Fellowships* : 31
(CERN, UMD, Florida, IISc., JNCASR, IPR, IIST, Delhi, IITD)
- *Post-Doctoral* : 04
(Liverpool, Chalmers Univ. of Tech., IISc., JNCASR)

Invited Talks : Abroad : 11

Stanford, UMD College Park, Arizona State Univ., MPI Polymer Research, Liverpool Univ. of Tokyo, Univ. of Tsukuba, NIMS, Tsukuba, Univ. of California, San Diego, Arizona State Univ.

Invited Talks : India : 03

IITK, IISER-Pune, IISER-Mohali



1. Curricular Aspects: New Initiatives

New Programmes : 11

1. B.Sc. (Hons.) Applied Botany Sciences *Botany*
2. B.Sc. (Hons.) Agriculture Science *Botany*
3. B.Sc. (Hons.) Cognitive Science
4. P.G. Diploma Big Data, Logistics & Operations Research *Mathematics*
5. B.Voc. Programmes : 05
 - *Dairy Technology* *Botany*
 - *Agriculture Technology* *Botany*
 - *Greenhouse Technology* *Botany*
 - *Telematics* *Physics & Comp. Sc.*
 - *Internet of Things* *Physics & Comp. Sc.*
6. M.Voc. Dairy Technology
7. Ph.D. Dairy Technology

A variety of new courses/electives introduced in all existing UG/PG programmes

Joint courses with IITD and joint PhD supervision with MSU-USA, Kiel-Germany, IITD, JNCASR, IUAC-Delhi, Delhi Univ.



2. Teaching, Learning and Evaluation

New Initiatives

- 1. Academic Flexibility : Electives**
- 2. Emphasis on Skilling, Entrepreneurship and Employment**
- 3. Experiential learning : Work-based Training**
- 4. Outcome based teaching**
- 5. Creation of e-Resources**
- 6. Experiential Learning : Internships and Summer Fellowships**
- 7. Labs. on Land**
- 8. Undergraduate Research Awards (UGRA) for Advanced Learners**
- 9. International, National, Research Centres & Inter-faculty collaborations**
- 10. Remedial Exam after every Semester instead of Annual exam.**
- 11. Vertical and Lateral Progression**
- 12. Daily Home Assignments**
- 13. Weekly Class Assignments**
- 14. PG, PhD viva-voce exam. through video-conferencing : abroad and in India**
- 15. Strong emphasis on Quality and Values**



3. Research, Innovation and Extension

Research Publications

- ❑ Journals : **551** • PhDs Awarded : 89
- ❑ Intl./Natl. Conf. Proc. : **130** • PhDs Ongoing : 170
- ❑ Books/Book Chapters : **8/36**
- ❑ Patents : **03**

Botany : *Novel sub-genomic transcript promoter DNA fragments and a method for obtaining sub-genomic promoter DNA fragments for figwort mosaic virus*

Chemistry : *A physico chemical process to enhance the sorption efficiency of Leucaena Leucocephala seed*

Physics and Computer Science : *Magnetically Tunable Planar Microwave Device on Non-magnetic Dielectric Substrate and a Method of Magnetic Tuning Thereof*

❑ Research Citations

- ❑ Journals : **12,011**

S. No.	Journal	Impact Factor, 2018
1.	<i>Applied Catalysis B: Environmental</i>	14.229
2.	<i>Renewable & Sustainable Energy Reviews</i>	10.556
3.	<i>IEEE Trans. Fuzzy Systems</i>	8.759
4.	<i>Journal of Catalysis</i>	7.723
5.	<i>Journal of High Energy Physics</i>	5.833
6.	<i>Renewable Energy</i>	5.439



3. Research, Innovation and Extension

Resource Mobilization

Research Funds generated from Extra-Mural Projects:

- **Projects Completed** : **Rs. 18.91 crores**
- **Projects In Progress** : **Rs. 28.42 crores**

Funding Agencies : UGC, DST, DBT, CSIR, BRNS, AICTE, MHRD

Indo – US Project (UGC-21st century Knowledge Initiative: Completed)

Semiconductor chip/chiplet based novel approaches for Efficient Solar – Water Splitting:

A. Photoelectrochemical Hydrogen Generation;

B. Photocatalytic Hydrogen Generation, Rs. 1.17 crores, 2015-18.

Partners: DEI, Arizona State University, Tempe, USA

Organization of Scientific Events

- **International Conferences** : **15**
- **National Conferences/Workshops/Seminars** : **23**
- **Seminars from Distinguished Visiting Scientists** : **24**



3. Research, Innovation and Extension

Extension Activities

- ***Teaching Support to Primary/Intermediate Colleges in Dayalbagh***
- ***Honorary Tutorial Services at Dayalbagh Day Boarding School***
- ***Organization of Annual Summer Vedic Mathematics Workshop for School Children***
- ***Voluntary Social Service in Dayalbagh Ashram***
- ***Voluntary Social Service in Medical Camps***
- ***Voluntary Social Service in Agriculture Clinics***
- ***Development and Maintenance of Agriculture Land near Solan***
- ***Reclamation of Land near Varanasi and sowing of Paddy crop***
- ***Organization of Frugal Innovation Camps at Rajaborari, MP and Murar Bihar***
- ***Organization of Winter Camps for School Children***
- ***Logistic Support for e-transmissions of classes abroad and in India***
 - ***EDUSAT Transmissions***
 - ***Telemedicine Services***
 - ***Medical Camps (Hole in the wall project)***
 - ***Day Boarding School Transmissions***
- ***Water Quality Testing***
- ***Testing of Water of Sewage Treatment Plant (STP)***
- ***Monitoring of Air Quality Parameters and Meteorological Parameters***



Research Collaborations

With leading research groups around the world

International

- *Harvard University, USA*
- *Stanford University, USA*
- *Princeton University, USA*
- *Michigan State University, USA*
- *Univ. of California Santa Barbara, USA*
- *University of Arkansas, USA*
- *Kavli Institute for Theoretical Physics, UCSB, USA*
- *University of Maryland, College Park, USA*
- *University of North Carolina, Wilmington, USA*
- *University of Waterloo, Canada*
- *Max Planck Institute for Science of Light, Germany*
- *University of Cologne, Germany*
- *Hokkaido University, Sapporo, Japan*
- *University of Tampere, Finland*
- *Christian Albrecht University, Kiel, Germany*
- *CINVESTAV – Tamaulipas, Mexico*
- *National Institute for Material Science, Japan*
- *Arizona State University, Tempe, USA*
- *Seneca College, Toronto, Canada*
- *University of Manitoba, Canada*
- *Eritria Inst. of Technology, Eritria*

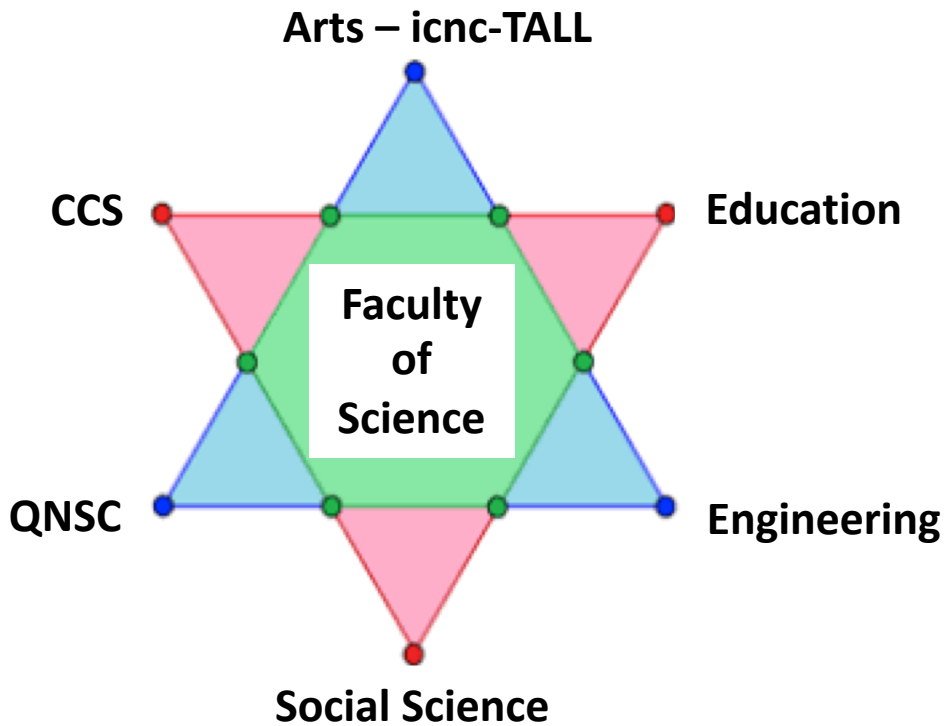
National

- *ICGEB, New Delhi*
- *TIFR, Mumbai*
- *IIT Delhi*
- *IIT Kanpur*
- *JNCASR, Bangalore*
- *NSC, New Delhi*
- *NPL, New Delhi*
- *CDAC, Pune*
- *JALMA, Agra*
- *G.B. Pant University of Agriculture & Tech.*
- *Dr. Y.S. Parmar University of Horticulture and Forestry*
- *Indian Oil Corporation, Faridabad*
- *BARC, Mumbai*
- *IARI, New Delhi*
- *AMU, Aligarh*

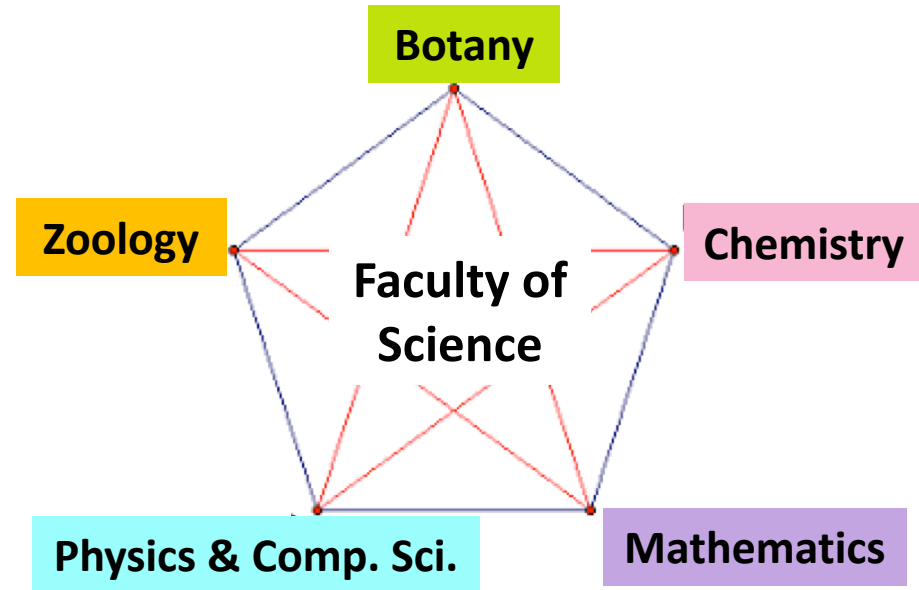


Research Collaborations

Inter-Faculty



Inter-Departmental





4. Infrastructure & Learning Resources

New Initiatives

- *Establishment of Botany Dept. in Dairy Campus*
- *Upgradation and Maintenance of Dairy*
- *Various Labs on Land*
- *Biodiversity Parks*
- *Food and Dairy Production & Testing Lab.*
- *Indigenously Designed (RT-ACE) Lab*
- *5G Laboratory*
- *IOT Laboratory*
- *DST FIST Central Instrumentation Lab., Zoology Dept.*
- *DST FIST Networking Lab., Zoology Dept.*
- *Surveillance Lab. and Systems*
- *Enrichment of Departmental Libraries*
- *Contribution to Landscaping: Creche, Dairy Farms, Amphitheatre*
- *Promotion of Foldscope with Stanford Univ.*
- *Establishment of Tinkering Lab. in REI, PV and Rajaborari, MP*





5. Student Support and Progression

Success in National Competitive Exams

- **UGC-CSIR NET** : **50**
 - **GATE** : **45**
 - **JEST/JAM/GRE/TOEFL** : **10**
 - **SLET** : **02**
 - **ICAR NET** : **02**
- Career Counseling
 - Coaching for Competitive Exams
 - Earn while you learn
 - Support for participation in Intl. Confs.

Placements

- **Universities/Colleges : 63**
Univ. of Arkansas, USA, Univ. of California, USA, Univ. of Missouri, USA, PGIMER, IARI, BARC, IITD, JNU, Jiwaji Univ., Amity, etc.
- **Research Laboratories: 62**
Cancer Res. Lab. Manitoba, ICMR, National Vector Borne Res. Lab., Lucknow, NPL Delhi, NCL, Pune, IITM, Pune, IOCL, S.P. Biotech Pvt. Ltd., etc.
- **Industry : 58**
TCS, Wipro, Infosys, Headstrong, Cadence, Genpact, BEL, Sasken, Biomorphic VLSI etc.,



6. Governance, Leadership & Management

Distributive and Participative Management
Transparency in Functioning at all Levels

Various Faculty/Departmental Committees
Faculty Co-ordinators/Proctor for each Programme

Institute Level Committees

- ***Dean, Planning and Development***
- ***Dean, Outreach***
- ***Chief Warden and Wardens, DEI Boys Hostel***
- ***Sports Officer***

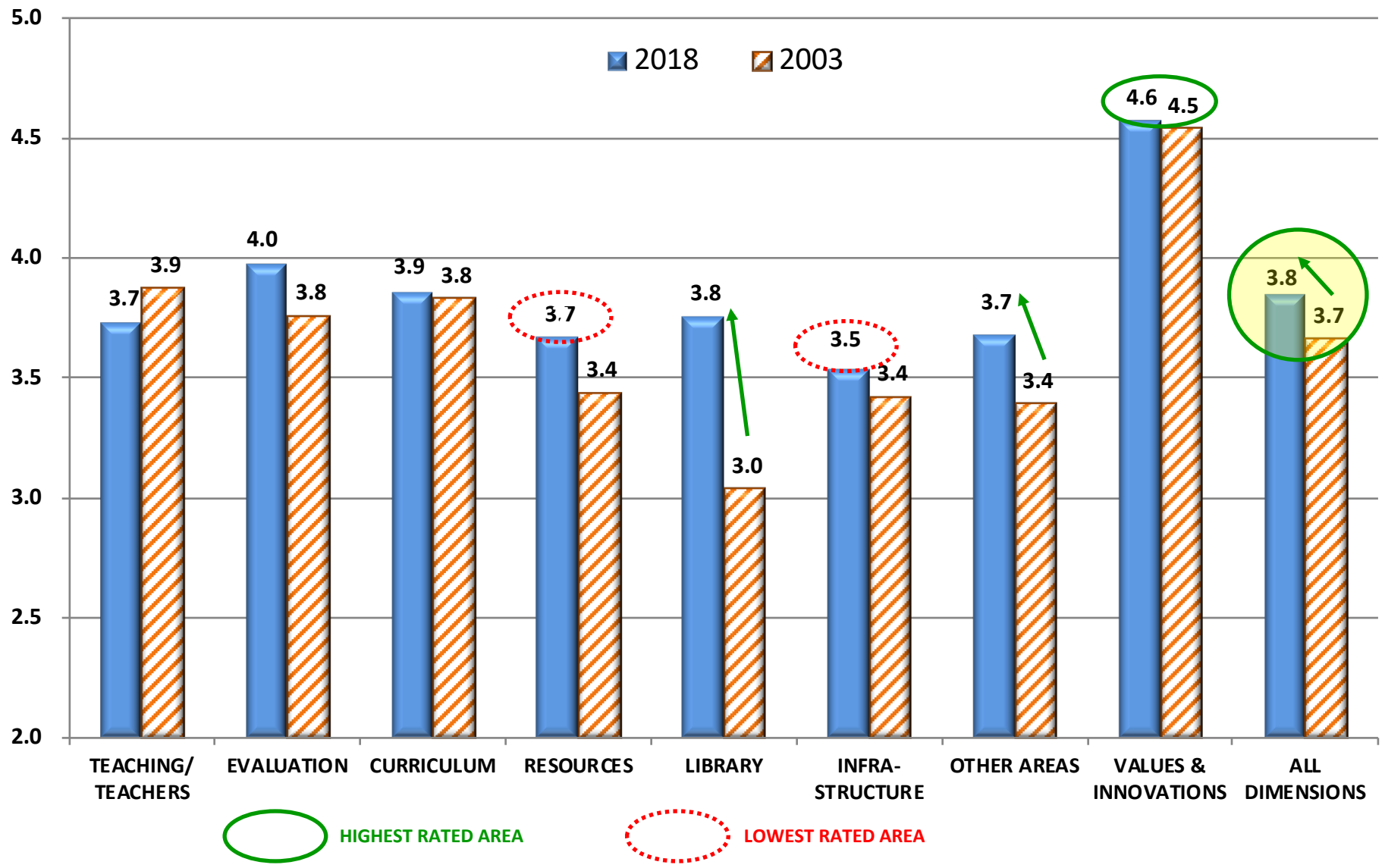
Strategy Development and Deployment

- ***Work according to Milestones***
- ***Periodic Reviews by IQAC, AAAC and ACE***
- ***Multi-pronged Feedback Mechanisms***
 - ***Individual Feedback by Faculty in each Course***
 - ***Class Committees/Proctorial Committees***
 - ***External Experts : BOS/End-Sem. Exams***
 - ***Alumni/Employers***



Alumni Survey : 2018

Dimension Scores

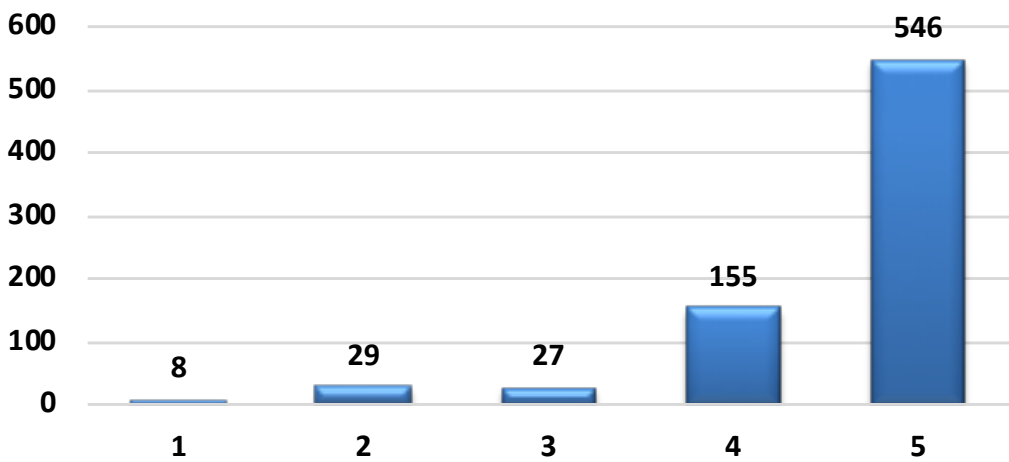




Alumni Survey : 2018

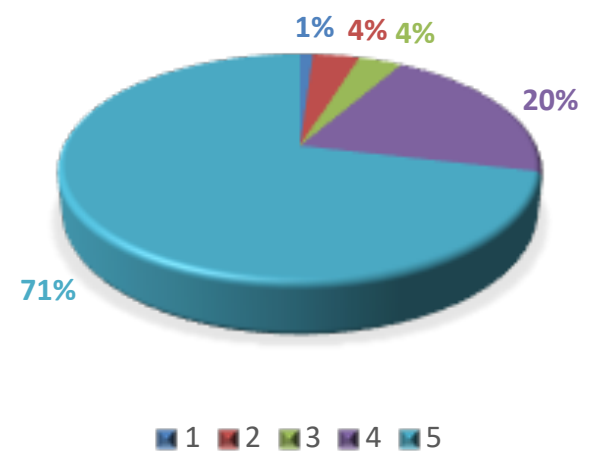
Values and Innovation

FREQUENCY DISTRIBUTION -
VALUES & INNOVATION



TOTAL RESPONSES – (85 X 9 Qs = 765)

FREQUENCY DISTRIBUTION -
VALUES & INNOVATION



ABOVE AVG. 91%



Future Plan of Action

Moving towards Excellence

- *Science of Consciousness*
- *Faculty of Agriculture*
- *Centre for Advanced Study in Bio-inspired Systems*
- *High Tech. Multi-climatic Greenhouses*
- *Precision Agriculture using Artificial Intelligence & Internet of Things*
- *Establishment of Field Station for Wildlife and Biodiversity Research*

Thank you
