



POST GRADUATE DEPARTMENT OF PHYSICS

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|----|--|--|
| 1. | Name of the department | PG PHYSICS |
| 2. | Year of Establishment | 2012 |
| 3. | Names of Programmes / Courses offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., etc.) | M.Sc. in PHYSICS |
| 4. | Names of Interdisciplinary courses and the departments/units involved | NIL |
| 5. | Annual/ semester/choice based credit system (programme wise) | Semester System : Prior to 2014 - 15 Choice Based Credit system: 2014 - 15 onwards |
| 6. | Participation of the department in the courses offered by other departments | NIL |
| 7. | Courses in collaboration with other universities, industries, foreign institutions, etc. | NIL |
| 8. | Details of courses/programmes discontinued (if any) with reasons | NIL |
| 9. | Number of teaching posts | |
| | Designation | Sanctioned |
| | Professors | NIL |
| | Associate Professors | NIL |
| | Asst. Professors | 6 |
| | | 5 |



10. Faculty profile with name, qualification, designation, specialization, (D.Sc./D.Litt. /Ph.D. / M. Phil. etc.,)

| Name | Qualification | Designation | Specialization | No. of Years of Experience | No. of Ph.D. Students guided for the last 4 years |
|------------------|---------------|---------------------|-------------------|----------------------------|---|
| Dr.Hina Bhargava | M.Sc., Ph.D. | Assistant Professor | Materials Science | 04 | --- |
| Dr. M.Y.Anand | M.Sc., Ph.D. | Assistant Professor | Astrophysics | 07 | ----- |
| Dr.K.T.Vasudevan | M.Sc., Ph.D. | Assistant Professor | Crystallography | 22 | 01* |
| Dr.Priya L | M.Sc., Ph.D. | Assistant Professor | Materials Science | 15 | 02+ |
| Dr.Sovan | M.Sc., Ph.D. | Assistant Professor | Particle Physics | 03 | --- |

+ Students Name : Ramya P, Proposed title of the thesis " Polymer / 1D nanocomposites" Guide - Priya L

* Students Name: Jayasudha S, Proposed title of the thesis "Study of Polyaniline /semiconductor nanocomposites" - Guide - K.T. Vasudevan, co-guide - Priya L

| | | |
|-----|--|---|
| 11. | List of senior visiting faculty | |
| | Dr. C.R.Ramaswamy | Retd. Professor, Dept of Physics, Bangalore University |
| | Dr. Keshava murthy | Head, Radiation Division, Indira Gandhi Center for Atomic Research, Kalpakkam |
| | Dr. Subaiah | Retd. Professor, Dept. Of Physics, Ananthapura University |
| | Dr. Chandramani R | Retd. Professor, Dept of Physics, Bangalore University |
| 12. | Percentage of lectures delivered and practical classes handled (programme wise) by temporary faculty | NIL |



| | | | |
|-----|--|-----------------|-------------|
| 13. | Student -Teacher Ratio (programme wise) | 12 : 1 | |
| 14. | Number of academic support staff | Sanctioned 2 | Filled 2 |
| 15. | Qualifications of teaching faculty with D Sc/ D.Litt. / Ph.D. / MPhil / PG | Ph.D M.Phil. | 05 NIL |
| 16. | Number of faculty with ongoing projects from | NIL | |
| | National Funding Agency | NIL | |
| | International Funding Agency | NIL | |
| 17. | Departmental projects funded by DST - FIST; UGC, DBT, ICSSR, etc. and total grants received. | NIL | |
| 18. | Research Centre /facility recognized by the University | NIL | |
| 19. | Publications | | |
| | Publication per faculty | 2.8 | |
| | Number of papers published in peer reviewed journals | 14 | |
| | National Journals | 1 | |
| | International Journals | 13 | |
| | Books Edited | NIL | |
| | Books Edited with ISBN Numbers | NIL | |
| | Impact factor | 1 | |
| | h - index | 1 | |



US Patent

| | |
|---|--|
| Name of the Faculty | Dr. Priya. L. |
| Title of the Published paper with details | Polycarbonyl-addition polymer block copolymer; electroconductivity , Jyoti Jog, S. Kulkarni, L. Priya, R. V. Chaudhari |
| Patent Number | US 6800221 B2, 2004 |
| Year | 2004 |

Details of Papers Published

i. International Journals

| Sl. No. | Name of the Faculty | TITLE OF THE PAPER | JOURNAL | IMPACT FACTOR | CITATIONS |
|---------|---------------------|--|--|---------------|-----------|
| 1 | Priya. L. | Preparation and Characterization of Polyaniline/Silver Nanocomposites | International Journal of ChemTech Research, 2014, 6(3), 1821-1823 | | |
| 2 | Priya. L. | Photoluminescent polystyrene/ Zns:Mn nanocomposites | Advances in applied science research, 2014, 5(5), 194-202 | | |
| 3 | Dr. Sovan Gosh | Electromagnetic mass and charge of electrons at relativistic speed | <i>Indian Journal of Physics</i> 87 (6) 607 (2013), DOI 10.1007/s12648-013-0254-z, (2013) | 1.785 | |
| 4 | Dr. Sovan Gosh | Radius of electron, magnetic moment and helical motion of the charge of electron | <i>Apeiron</i> 19 (3) 247 (2012) | | |
| 5 | Dr. Sovan Gosh | Radii of electrons and their α -quantized relations | <i>Indian Journal of Physics</i> 86 (6) 481 (2012), DOI 10.1007/s12648-012-0083-5 | 1.785 | |
| 6 | Priya. L. | HCl doped PVA/ PANi Blends: DC conductivity studies | Advances in Applied Science Research, 2012, 3(1), 489-494 | | |



| Sl. No. | Name of the Faculty | TITLE OF THE PAPER | JOURNAL | IMPACT FACTOR | CITATIONS |
|---------|---------------------|---|--|---------------|-----------|
| 7 | Hina Bhargava | Low temperature Mössbauer and DC magnetization studies in nano-sized Ni substituted Co-Zn ferrites | Hyperfine Interactions , 199 (2011) 403-412 | 0.21 | |
| 8 | Hina Bhargava | Study of dependence of magnetic properties on seeding temperature in fine particles of $\text{Cu}_{0.25}\text{Co}_{0.25}\text{Zn}_{0.5}\text{Fe}_2\text{O}_4$ | Bulletin of Material Science , 34 (2011) 1095-1101 | 0.585 | 1 |
| 9 | Dr. Hina Bhargava | Size dependent magnetic properties in $\text{Cu}_{0.25}\text{Co}_{0.25}\text{Zn}_{0.5}\text{Fe}_2\text{O}_4$ | Bulletin of Material Science (Accepted) | 0.585 | 0 |
| 10 | Dr. Sovan Ghosh | External magnetic field with different radii of electron and intrinsic properties of electron invoking the spinning sphere model of electron | Pacific Asian Journal of Mathematics, 5 (2), 109, 2011 | | 1 |
| 11 | Dr. Sovan Ghosh | Electromagnetic Mass and Charge in The Framework of Spinning Sphere Model of Electron | International Journal of Applied Physics, 1 (2), 119, 2011 | | 0 |
| 12 | Dr. Sovan Ghosh | Relations of the electron radii and electron model | International Journal of Physics, 4 (2), 125, 2011 | | 0 |
| 13 | Dr. Sovan Ghosh | Self Magnetic Field and Current-loop of Electron with Five Different Radii and Intrinsic Properties | International Journal of Applied Physics, 1 (2), 91 2011 | | 0 |



ii. National Journals

| Sl. No. | Name of the Faculty | TITLE OF THE PAPER | JOURNAL | IMPACT FACTOR | CITATIONS |
|---------|---------------------|--|---|---------------|-----------|
| 1 | Dr. Priya. L. | Synthesis and Characterization of Photoluminescent PVA/ZnS:Mn ²⁺ Nanocomposites | Mapana: Journal of science, 12, 31-37, 2013 | | 0 |

| | | |
|-----|--|-----|
| 20. | Areas of consultancy and income generated | NIL |
| 21. | Faculty as members in | |
| | a. National Committees | NIL |
| | b. International Committees | NIL |
| | c. Editorial Boards | NIL |
| | MEMBERSHIP IN ACADEMIC BODIES | |
| | Dr. Sovan Ghosh Life Member, The Indian Science Congress Association (Membership Number: L14015) | |
| | Dr. K.T.Vasudevan Life Member, Institute of Technical education | |
| | Dr. Priya L Life Member, Society of Polymer Science | |
| | Dr. Hina Bhargav Life Member, Indian Society of Radiation Physics | |
| 22. | Student projects | |
| | a) Percentage of students who have done in-house projects including inter departmental/programme | NIL |
| | b) Percentage of students placed for projects in organizations outside the institution i.e.in Research laboratories/Industry/ other agencies | NIL |



| | | |
|-----|--|---|
| 23. | Awards / Recognitions received by faculty and students | |
| | Priya L Coinventor of “Conductive polymer blends and a process for the preparation thereof, J. P. Jog, S. M. Kulkarni, L. Priya, R. V. Chaudhari, Patent No.- 6800221 (6/10/2004)” awarded to CSIR | |
| | Priya L Awarded research project vide NO. VGST- SMYSR 24/9/2012, Vision Group of Science and Technology, Government of Karnataka. | |
| | Priya L Awarded research project by VGST- SPICE Govt. of Karnataka (Implementation year Nov 2011- Mar 2012) Project Title : PVA/ ZnS/Mn ²⁺ : Preparation and Characterization (Budget:Rs.30,000/-) | |
| | Sovan Ghosh Best poster award in Physical Sciences section in 99th Indian Science Congress, 2012 held at KIIT University, Bhubaneswar during January 3-7, 2012 | |
| | Sovan Ghosh 2 nd Best Poster in 8th National Conference of PANE, 2012 held at Department of Physics, Mizoram University, Aizwal during December 17-19, 2012 | |
| 24. | List of eminent academicians and scientists / visitors to the department | |
| a. | Prof. M.S. Hegde | Professor Emeritus, Solid State and Structural Chemistry Unit, Indian Institute of Science, Bangalore |
| b. | Prof. Vijay B Shenoy | Professor, Molecular Biophysics Unit, Indian Institute of Science, Bangalore |
| c. | Prof. . N.G. Puttaswamy, | Retd. Professor, Dept of Physics, Bangalore University |
| d. | Prof. T.N. Guru Row | Professor, Solid State and Structural Chemistry Unit, Indian Institute of Science, Bangalore |
| e. | Prof. R. Damle | Professor and Chairperson, Dept of Physics, Bangalore University |
| 25. | Seminars/ Conferences/Workshops organized & the source of funding | NIL |



Conferences Attended

i. International Conferences

| Sl. No. | Name of the Faculty | Title of the Conference | Date | Organized By | Title of the Paper / Poster |
|---------|---------------------|---|--------------------|--|-----------------------------|
| 1 | Dr. K. T. Vasudevan | International conference on Materials and Characterization Techniques | 10 - 12 March 2014 | Vellore institute of Technology, Vellore | |
| 2 | Dr. L. Priya. | International conference on Materials and Characterization Techniques | 10 - 12 March 2014 | Vellore institute of Technology, Vellore | |
| 3 | Dr. L. Priya. | International Conference on Advanced Materials 2012, at the | January 5-7, 2012 | Department of Physics, Loyola College, Chennai | |
| 4 | Dr. L. Priya | 5 th Bangalore Nano | 5-7 December, 2012 | Hotel LalitAsok, Bangalore | Attended |
| 5 | Dr.Hina Bhargava | International conference on Materials and Characterization Techniques | 10 - 12 March 2014 | Vellore institute of Technology, Vellore | |

ii. National Conferences Attended

| Sl. No. | Name of the Faculty | Title of the Conference | Date | Organized by |
|---------|---------------------|--|------------------------------|---------------------------|
| 1 | Dr. K. T. Vasudevan | UGC Sponsored National Conference on Atomic Physics, Molecular Physics and X-ray Crystallography | 8-10 January 2015 | Vijaya College, Bangalore |
| 2 | Dr. L. Priya | National Conference on recent advances in Chemical and Environmental Sciences 2011 | 28-29 th Dec 2011 | Jain University Bangalore |



| Sl. No. | Name of the Faculty | Title of the Conference | Date | Organized by |
|---------|---------------------|---|--|---|
| 3 | Dr. L. Priya | UGC Sponsored National Conference on Atomic Physics, Molecular Physics and X-ray Crystallography, | 8-10 January 2015 | Vijaya College, Bangalore |
| 4 | Dr.Hina Bhargava | UGC Sponsored National Conference on Atomic Physics, Molecular Physics and X-ray Crystallography | 8-10 January 2015 | Vijaya College, Bangalore |
| 5 | Dr.Sovan Ghosh | 102 nd Indian Science Congress, | 3 rd -7 th January 2015 | University of Mumbai, Mumbai |
| 6 | Dr.Sovan Ghosh | 101 st Indian Science Congress, | 3 rd -7 th February 2015 | University of Jammu, Jammu |
| 7 | Dr.Sovan Ghosh | 100 th Indian Science Congress | 3 rd -7 th January 2013 | University of Calcutta, Kolkata |
| 8 | Dr.Sovan Ghosh | 8 th PANE National Conference | 17 th -19 th December 2012 | Mizoram University, Aizawl |
| 9 | Dr.Sovan Ghosh | 99 th Indian Science Congress | 3 rd -7 th January 2012 | KIIT University, Bhubaneswar |
| 10 | Dr.Sovan Ghosh | National Workshop on "Nuclear And Atomic Techniques Based Pure And Applied Sciences" | 1 st -3 rd February 2011 | Tezpur University, Tezpur |
| 11 | Dr.Sovan Ghosh | 7 th PANE National Conference | 5-6 th October 2010 | Manipur University, Imphal |
| 12 | Dr.Sovan Ghosh | 97 th Indian Science Congress | 3 rd -7 th January 2010 | Kerala University, Trivandram |
| 13 | Dr.Sovan Ghosh | 96 th Indian Science Congress | 3 rd -7 th January 2010 | North Eastern Hill University, Shillong |



iii. State Level Conferences

| Sl.No. | Name of the Faculty | Title of the Conference | Date | Organized By |
|--------|---------------------|---|-----------------------------------|-------------------------------|
| 1 | Dr.Sovan Ghosh | 6 th Karnataka Science and Technology Academy Conference | 20-21 st December 2013 | Christ University, Bangalore |
| 2 | Dr.Sovan Ghosh | 57 th Annual Technical Session of Assam Science Society | 16 th March 2015 | Guwahati University, Guwahati |

26. Student profile programme/course wise:

| Year | Applications received in the college | Selected in the college | Selected in the university + management | Enrolled | | Pass percentage | |
|-----------|--------------------------------------|-------------------------|---|----------|----|-----------------------------------|--------|
| | | | | *M | *F | II sem | IV sem |
| 2012 - 13 | 56 | 13 | 17 | 16 | 14 | 20.83% | - |
| 2013 - 14 | 77 | 13 | 17 | 20 | 10 | 24.14% | 45.83% |
| 2014 - 15 | 80 | 15 | 15 | 15 | 15 | Yet to appear for the examination | |

*M = Male *F = Female

27. Diversity of Students

| Name of the Course | % of students from the same state | % of students from other States | % of students from abroad |
|--------------------|-----------------------------------|---------------------------------|---------------------------|
| MSc | 100 | NIL | NIL |



28. How many students have cleared national and state competitive examinations such as NET, SLET, GATE, Civil services, Defense services, etc.?
NIL

29. Student progression

| Student progression | Against % enrolled | | | | | | |
|---|---|--|-------------------------|----|--|----|---|
| UG to PG | NA | | | | | | |
| PG to M.Phil. | No Data | | | | | | |
| PG to Ph.D. | <table border="1"> <thead> <tr> <th>No. of Students</th> <th>Name of the Institution</th> </tr> </thead> <tbody> <tr> <td>01</td> <td>Indian Institute of Science, Bangalore</td> </tr> <tr> <td>02</td> <td>Project assistants at Raman Research Institute, Bangalore</td> </tr> </tbody> </table> | No. of Students | Name of the Institution | 01 | Indian Institute of Science, Bangalore | 02 | Project assistants at Raman Research Institute, Bangalore |
| | No. of Students | Name of the Institution | | | | | |
| | 01 | Indian Institute of Science, Bangalore | | | | | |
| 02 | Project assistants at Raman Research Institute, Bangalore | | | | | | |
| Ph.D. to Post-Doctoral | NA | | | | | | |
| Employed <ul style="list-style-type: none"> • Campus selection • Other than campus recruitment | 5 students are working as Lecturers at different colleges (16.5%) | | | | | | |
| Entrepreneurship/Self-employment | NIL | | | | | | |

| | | |
|-----|---------------------------------------|-----------|
| 30. | Details of Infrastructural facilities | |
| a. | LIBRARY | |
| | Books PG Library | 294 Books |



| | | |
|-----|---|---|
| b. | Internet facilities for Staff & Students | |
| | Available with a computer Laboratory named Ramanujan FOSS Computer Laboratory equipped with 20 computers | |
| c. | Class rooms with ICT facility | 01 Class room |
| d. | Laboratories | 04 |
| | Area of the Laboratories | 3800 sq.ft. |
| | Special Equipment in the Laboratory ➤ X - Ray Diffractometer (PHYWE-Germany) : Rs. 15.4 lakhs ➤ UV-Vis spectrometer : Rs. 1.69 lakhs ➤ Magnetic Susceptibility setup : Rs. 1.6 lakhs | |
| 31. | Number of students receiving financial assistance from college, university, Government or other agencies | Data furnished under student support services |
| | In addition to the above, ➤ THREE students were awarded Merit Scholarship of Rs.10,000 each by the BHS-HES in 2013 ➤ TEN students are awarded post matriculation – Food and Accommodation scholarship | |
| 32. | Details of Student Enrichment Programmes | 03 |
| | Invited Lecture: Prof. Vijay B Shenoy , Professor, Molecular Biophysics Unit, Indian Institute of Science on “ Role of Cold Atoms in Superconductivity ” | |
| | Invited Lecture: Prof. M S Hegda , Professor Emeritus, Solid State and Structural Chemistry Unit, Indian Institute of Science, Bangalore on “ Introduction to Crystallography ” | |
| | Invited Lecture: Prof. Sharmishta Sahu , Associate Professor, Dept. Of Physics, Maharani Lakshmi Ammani College, Bangalore on “ Quantum Harmonic Oscillator ” | |

33. Teaching methods adopted to improve student learning

- Problem solving sessions
- Group discussions
- Student seminars
- Interaction with scientists/experts
- Demonstrating various physics concept through simulations
- Encouraging students to write computer programs to Visualise concepts and for detailed understanding.



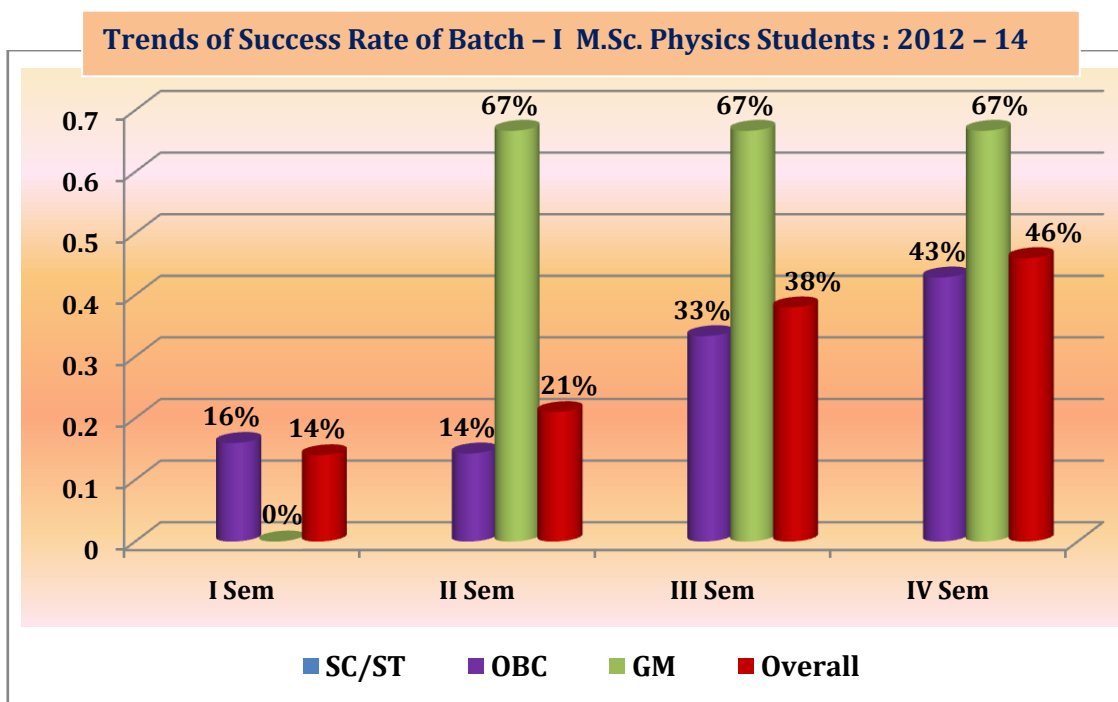
34. **Participation in Institutional Social Responsibility (ISR) and Extension activities**

- Participation in environment awareness programs
- Participation in condemning atrocities on women
- Encouraging students belonging to socially oppressed classes to continue studies without any mid – course drop outs
- Participation in National festivals

I. Trends of success rate

Batch - I : 2012 - 2014

| Category | I Sem | II Sem | III Sem | IV Sem |
|----------------|------------|------------|------------|------------|
| SC/ST | NA | NA | NA | NA |
| OBC | 16% | 14% | 33% | 43% |
| GM | 0% | 67% | 67% | 67% |
| Overall | 14% | 21% | 38% | 46% |

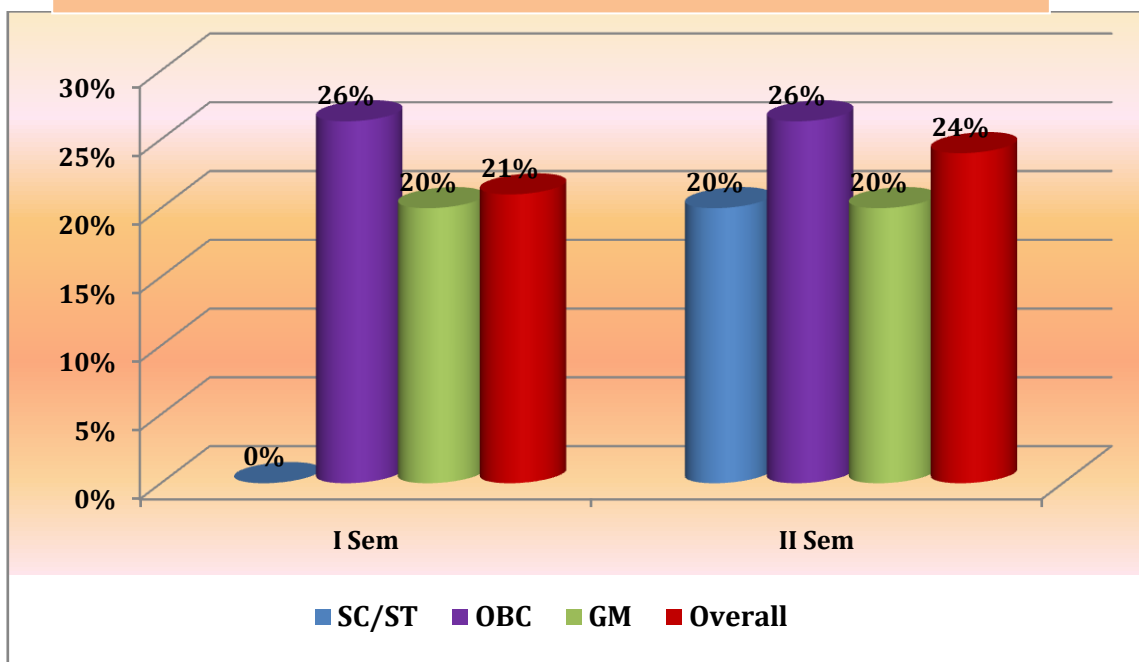




Batch - II : 2013

| Category | I Sem | II Sem |
|----------------|------------|------------|
| SC/ST | 0% | 20% |
| OBC | 26% | 26% |
| GM | 20% | 20% |
| Overall | 21% | 24% |

Trends of Success Rate of Batch - II M.Sc. Physics Students : 2013 - 14



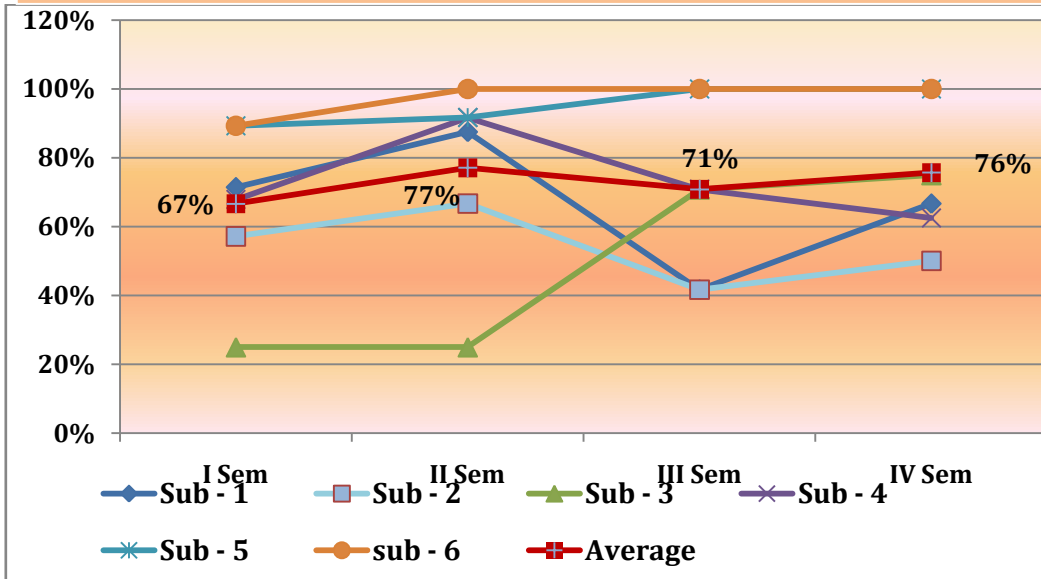
II. Cohort Performance Subject Wise

Batch - I : 2012 - 14 - Subject Wise Performance

| Semester | Sub - 1 | Sub - 2 | Sub - 3 | Sub - 4 | Sub - 5 | sub - 6 | Average |
|----------|---------|---------|---------|---------|---------|---------|------------|
| I Sem | 71% | 57% | 25% | 68% | 89% | 89% | 67% |
| II Sem | 88% | 67% | 25% | 92% | 92% | 100% | 77% |
| III Sem | 42% | 42% | 71% | 71% | 100% | 100% | 71% |
| IV Sem | 67% | 50% | 75% | 63% | 100% | 100% | 76% |



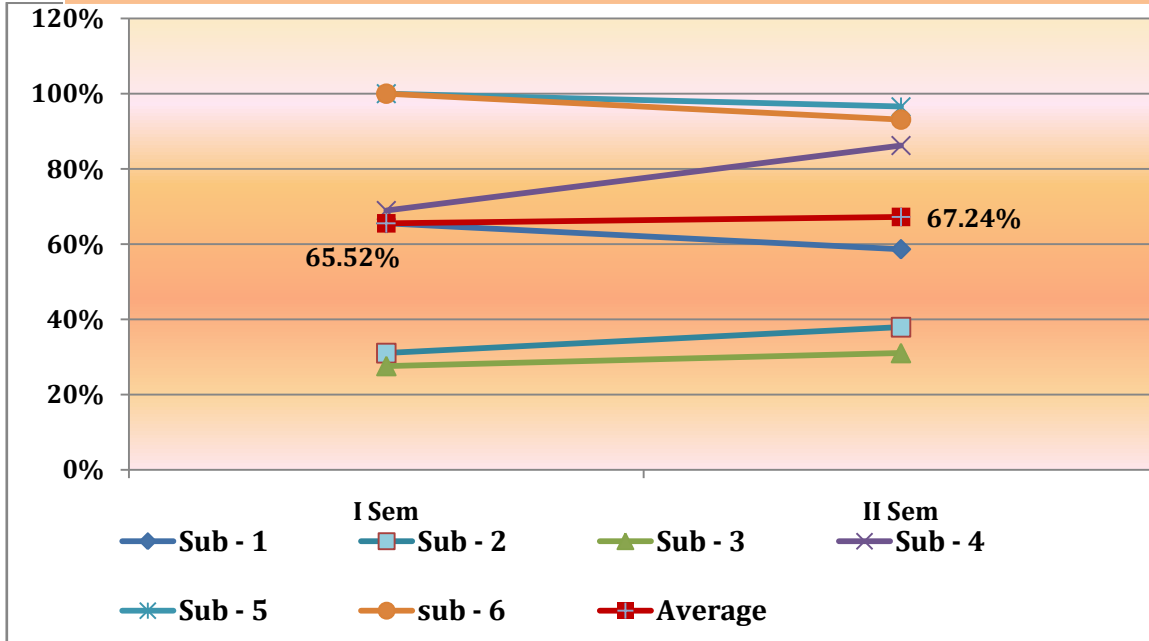
Subject - Wise Success Rate of Batch - I M.Sc. Physics Students : 2012 - 14



Batch - II : 2013 Subject Wise Performance

| Semester | Sub - 1 | Sub - 2 | Sub - 3 | Sub - 4 | Sub - 5 | sub - 6 | Average |
|----------|---------|---------|---------|---------|---------|---------|---------|
| I Sem | 66% | 31% | 28% | 69% | 100% | 100% | 65.52% |
| II Sem | 59% | 38% | 31% | 86% | 97% | 93% | 67.24% |

Subject - Wise Success Rate of Batch -II M.Sc. Physics Students : 2013 - 14





35.SWOC analysis of the department and Future plans

Strengths

- Department has a faculty expertise in wide range of fields from Astrophysics to Plasma physics
- Historic reputation of the college
- Student feeding guaranteed

Weaknesses

- Shortage of faculty members posing too high workload
- Insufficient Infrastructure for Research
- Most of the students are from the rural areas who are poor in English communication

Opportunities

- Collaborative research work can be done with prestigious research institute and industries present in Bengaluru.
- Better place for students to interact with world-class research labs and researchers.

Challenges

- Many Private/Deemed Universities/Autonomous institutions are coming up in and around Bengaluru which are posing a very competitive academic and career challenge.

Future Plans

- Setting a benchmark for the quality of the students
- Coaching students to tackle the competitive examinations like NET, GATE etc.
- Minor research projects for students to initiate scientific temperament
- Establishing a research center
