

**GOVT. E. RAGHAVENDRA RAO POSTGRADUATE SCIENCE
COLLEGE, BILASPUR (CHHATTISGARH)**



NAAC Accredited - Grade 'A'
&
College with Potential for Excellence

Detailed Project Report (DPR)

For

**COMPONENT - 8: Enhancing Quality and Research in
Selected Autonomous College**

Rashtriya Uchchatar Shiksha Abhiyan (RUSA)



**STATE PROJECT OFFICE, RUSA, RAIPUR
CHHATTISGARH**

Govt. E. Raghavendra Rao Postgraduate Science College Bilaspur (Chhattisgarh)

Glimpses of the College

- As an oldest institution it was a part of a private college established in 1944 and taken over by the Government of Madhya Pradesh in 1972, after separation the science faculty had been developed into Govt. Postgraduate Science Model College and recognized by UGC under section 2 (f) & 12 (B) on 15th July, 1986.
 - In the year 1987, the Government and UGC found it fit to be an autonomous college, though it could be adopted autonomous structure in 1993-94 and since then the college has been a full-fledged academic autonomy in both UG & PG program.
 - The college was accredited as B⁺ grade by NAAC in 2005 and the Government of Chhattisgarh has awarded the status of 'Centre for Excellence in Science' in 2006 and changed its name as Government E. Raghavendra Rao Postgraduate Science College.
 - Further it has achieved the status of 'College with Potential for Excellence' from University Grants Commission, New Delhi in 2010-11 and accredited as **Grade – 'A' by NAAC in 2015**.
 - At present the College has well established 11 departments with 06 Research Centers recognized by the University. Under semester system, it offers 10 subject combinations (4 in Mathematics & 6 in Biology group) at UG level with several papers of discipline/generic choice and 11 skill based courses as open choice under **Choice Based Credit System** along with honors courses and 06 subjects (Mathematics, Physics, Chemistry, Botany and Zoology) at PG level. Besides these courses BCA & PGDCA are also conducted smoothly.
 - At present there are **28 regular** faculty members (05 Promoted Professors, 23 Assistant Professors) and 06 Guest faculties against **34 sanctioned** posts.
 - Moderating and redesigning of courses as per UGC module and needs of students, introduction of seminar, project work (internal & external), field study, modular course, semester pattern of Examination with continuous evaluation system are some of the benefits of autonomy, which the college has implemented effectively.
 - With a view to make the education more community based, besides UG, PG & Ph. D courses various outreach programs such as Blood Donation Camp, Health Camp, Disaster Management Programmers, Sanitation, Road Safety, Weekend environmental issues are taken up through the NCC, NSS, Youth Red Cross unit of the college.
 - Regularly organized classes, Extra-moral lectures, interaction with students in Tutorial and Practical Classes, Remedial Classes etc. are aimed at inculcating moral values in the students. The NCC/NSS students of the college have participated in both Independence Day and Republic Day parades at the state and National levels and honored with several national / state levels Prize / Medal / Scholarship.
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- **Vision:** The Vision of the College is to improve the quality of higher education in science serving the social needs and to uplift the academic standards of the rural youths and fostering an enduring sense of discipline and single minded dedication to work.
 - **Mission:** The Mission is to provide quality and value based education in the field of science to the needy, downtrodden and first generation students of the society.

SWOC Analysis Summary

<p>Strengths:</p> <ul style="list-style-type: none"> ✓ An oldest and famous Autonomous college known for exclusively science education in this region/state. ✓ Well catchment area that creates admission of large number of marginalized (SC/ST/OBC) and girls students from not only surrounding villages & city but from every corners of the state. ✓ Highly qualified, Senior, well experienced, competent and dedicated faculty members. ✓ Team work, dedication and harmony among staff members. ✓ Large campus of 30 acre land, buildings comprises science departments with laboratory separately, lecture theater, auditorium, conference hall, boy's hostel, canteen, Botanical garden and play grounds. ✓ Well established Autonomous cell and a College with potential for excellence. ✓ Healthy academic environment catering study of all basic science subjects with vocational subjects viz. BCA, Computer Science, Information technology, Microbiology and Biotechnology at UG level, PGDCA and Microbiology at PG level. ✓ Recognized Research centre for science subjects (Mathematics, Physics, Chemistry, Botany, Zoology and Microbiology) ✓ Functional Sports departments, NCC, NSS & Youth Red cross society for both boys and girls. ✓ Facilities for students – Protected drinking water, High speed Wi-Fi internet access system, large no. of computers, rich library and equipped sports department with indoor, outdoor games & Gym facility. 	<p>Weaknesses:</p> <ul style="list-style-type: none"> ☞ Poor set up of teaching & non-teaching staffs, un-fulfillment of sanctioned posts and irregular transfer policy despite of UGC directives for autonomous colleges in this regards that badly affect the academic progress / development and completion of plan / projects. ☞ Inadequate 'Student: Teacher' ratio. ☞ Less number of sanctioned posts as compared to UGC norms. ☞ Heavy work load on faculty members and less no. of supporting (technical & non-technical) staffs. ☞ Inadequate infrastructure i.e. class room, Laboratory, library, laboratory equipments, Sports facilities and common room with toilet as per growing students' strengths. ☞ Insufficient faculty, laboratory and office staff, skilled & qualified laboratory technician. ☞ Lack of Reading hall, Girls common room, Girls hostel, PG and research laboratory, Central computer laboratory for teachers, staffs & students, staff quarter & guest house. ☞ Insufficient fund provided by the government, limitation in utilization of fund released by UGC due to government's store purchase rules.
<p>Opportunities:</p> <ul style="list-style-type: none"> ⊙ Recognition as a well reputed and prestigious institute of higher education and research. ⊙ Availability of funds e.g. UGC / CSIR /DST / DO En / DBT / CG-COST etc. ⊙ Well availability of students to increase the intake capacity and thrust of academic enhancement in this area ⊙ Availability of resource person in skirting area. ⊙ Linkage/collaboration with different institutes. ⊙ Capacity to enhance Vocational / Job oriented /Professional courses. ⊙ Mobilization of external agencies through tie up. ⊙ Scope of various extension activities for society. ⊙ Scope to strengthen cultural and sport's talent. ⊙ Good scope for researches & development in especially in field of life sciences, as CG is a herbal state with rich bio-diversity ⊙ RUSA as a major source of funding for heads that are not supported by the UGC or the State Government. 	<p>Challenges:</p> <ul style="list-style-type: none"> ❖ <i>Attractive</i> terms and conditions offered by industries to the brilliant students, reducing the availability of students for higher studies. ❖ Continuous need to revise the course content and high <i>redundancy</i> rate of the available resources/opportunity/ technology. ❖ Quality and innovative research, resource mobilization and industrial collaboration. ❖ Inadequate availability of proportionate infrastructure and funds with reference to time and space. ❖ Less employability and lack of communication skills. ❖ Complex purchase / procurement procedure. ❖ The quality of academic services, research activities and student support programs are a few of the challenges ahead.

RUSA, COMPONENT - 8
Enhancing Quality and Research in Selected Autonomous College

A. HARD COMPONENT: Construction and Equipments

Heads	Sl. No.	Work Plan / Item	Description / Justification	Estimated Cost (Rs.)
New Construction	01	A new building for the Department of Physics Agency - PWD Annexure - I	To facilitate the quality education with innovative research, the laboratory for postgraduate and research courses is acute need in this institution, especially for the department of Physics. Construction Area - 738 Sq. Mt.	1000000
New Equipments / Facilities	01	X-Ray Diffraction Unit (XDR unit) D2 PHASER, BRUKER make Annexure - II	It is required to provide the adequate facility for PG students & Researchers of Physics, Chemistry and life Sciences This instrument has rapid analytical technique used for phase identification, unit cell dimension determination and to find average bulk composition of the material synthesized in laboratory.	320000
	02	ALPHA II Compact FT-IR Spectrometer BRUKER Annexure - III	It is required to provide the proper facility for PG students & Researchers of Chemistry and life Sciences	110000
	03	Muffle Furnace, Accumax India Annexure - IV	It is required to provide the proper facility for PG students & Researchers of Physics and Chemistry It is used for various ignition tests, organic & inorganic ashes, preparation of crystals, quenching tests and annealing the samples	10000
	04	COMPUTER SYSTEM	Desktop, Core i3, 4GB RAM, 2TB HD, DVD-RW, 19" Screen, Windows-10 It is required to provide the proper facility for PG students & Researchers of Mathematics and Information Technology	320000
	05	Cricket Bowling Machine JUGS-Australia Annexure - V	It is required to provide the proper facility to Sport Students selected for State and National Cricket. It is revolutionary training equipment. It's portable & can be moved easily. Runs conveniently on 220 volts of power supply.	280000
TOTAL				1500000

(One Caror and Fifty lac only)

B. SOFT COMPONENT:

Sl. No.	Templates / Purpose	Description / Justification	Expenditure (Estimated)
1	To strengthen Teaching and Learning	<p>Our vision is to improve quality of education in science, serving the social needs and to uplift the academic standards of rural youths.</p> <p>We have adopted Choice Based Course System with Honors course in UG and Semester system in PG Program.</p> <p>Teaching & Learning are our prime goal and we are under process to strengthen the teaching-learning and innovative pedagogy.</p>	8000000
2	Promotion of Research and Consultancy services	<p>Our vision is to improve quality of research in science serving the social needs and to uplift the academic standards of rural youths.</p> <p>We have recognized research centre in Physics, Chemistry, Mathematics, Botany, Zoology and Microbiology and students are enrolled in Ph. D. Program by the Atal Bihari Vajpayee Vishwavidyalay, Bilaspur. We require motivation / promotion in research activities and consultancy services.</p>	8000000
3	Extension activities	<p>With a view to make the education more community based various outreach programs such as Blood Donation Camp, Health Camp, Disaster Management Programs, Sanitation, Road Safety, Weekend environmental issues are taken up through the NCC, NSS, Youth Red Cross unit of the college.</p> <p>We have to elaborate and extend the extension activities of our students for the awareness and benefit of the society and holistic development of learners</p>	2500000
4	Capacity building Program	<p>The faculty members regularly participate and present research papers in National or International Seminars/ Conferences and also organizing Workshop/ Seminars/ Conferences in this institution.</p> <p>We have planned to organize National / International Seminar/Conference/Workshop and training program under capacity building program.</p>	5000000
5	Career counseling Program	<p>The college has a functional Career counseling & Placement cell which organizes the program concerned every year.</p> <p>We have planned to organize more elaborated Career counseling and Placement Program.</p>	3000000
6	Industrial Visit / Study, Tour / Field work	<p>We have moderated and redesigned the courses curriculum as per UGC module and regional needs and Seminar, Project work (internal & external), Field study, Modular course have been introduced under semester pattern of Examination with continuous evaluation system</p> <p>As per course curriculum, to enhance the quality of education, we plan for Industrial Visit / Study, Tour / Field work department wise.</p>	4000000
7	Skill development of Administrative staff	<p>Skill development Programs are variously organized by the departments in this college.</p> <p>We have to elaborate the plan to organize various Skill development for Students, Faculties & Administrative staff</p>	1500000
8	Financial assistance to organize Coaching camps during Summer & Winter vacation for various sports	<p>Keeping present circumstances in view enhancement in education & research and extracurricular activities, we plan to organize various coaching and workshop during summer & winter vacation.</p>	3000000
TOTAL			35000000
(Three Caror and Fifty Lac only)			

SOFT COMPONENT: Detail Work plan / Description

1. To strengthen Teaching and Learning -

As per the vision of this college to improve quality of education in science, serving the social needs and to uplift the academic standards of rural youths, the course curriculum and examination system have been reformed and the college has adopted the Choice Based Course System with Honors course in UG and Semester system in PG Program and continuous assessment system.

Teaching & Learning are our prime goal and we are under process to strengthen the teaching -learning and innovative pedagogy. As per requirement, under this section following up-gradation will be adopted / performed -

Activities / Work-plan (Proposed)	Expenditure (Estimated)
➤ Organization of Guest lectures and arrangement of Visiting Professor based on their specialization / expertise according to our requirement for benefit of faculty members and Honors / PG / Ph. D. students	900000=00
➤ Educational software for various fields of science	2000000=00
➤ Operation of Faculty exchange program for excellence in teaching-learning methodology and pedagogy	900000=00
➤ Adoption of Industry Academia Interaction activities to minimize the gap between industry and academics as per the application of science in industrial development with sustainability	500000=00
➤ Provide the opportunity to faculties/researchers /students for visit of reputed laboratory and participate in academic training program	1000000=00
➤ Enrichment of Library and motivation of students towards e-books and online courses, providing concern facility	1200000=00
➤ Establishment of Virtual Class rooms	800000=00
➤ Organization of Workshop and Training program for Honors & Postgraduate students	700000=00
TOTAL	8000000=00
(Eighty Lac only)	

2. Promotion of Research and Consultancy -

The college has recognized research centre in Physics, Chemistry, Mathematics, Botany, Zoology and Microbiology and faculty members have engaged themselves in various field of research. Department wise faculty of the college have organized various Seminars / Symposia / Conferences and workshop and completed 12 major and minor projects from different funding agency. More than 80 candidates have been awarded Ph. D. degree from this college and presently 24 students are enrolled in Ph. D. course. More than 400 research papers are published by teaches of the college during last ten years and they have participated more 90 National / International Seminars/Conferences and presented their papers as well as resource lectures.

In this college, internal and external research projects system for Postgraduate students have also been employed. Presently it requires motivation / promotion in research activities and consultancy services and it is essential to financial support for more research activities, so we require the support as follows -

Activities / Work-plan (Proposed)	Expenditure (Estimated)
➤ Laboratory maintenance: There are various hurdles have to face in laboratory to harsh the performance and consistency of research work, such as electric supply, water supply, gas supply and instrument faults. To overcome such hurdles, it is required.	1500000=00
➤ Annual maintenance of Sophisticated equipments: We have procured some sophisticated equipments utilizing the funds provided by RUSA, so we require such support for maintenance of Sophisticated equipments	1400000=00
➤ Consumable items of the PG/Research/Central Laboratory: To perform the quality research a large quantity of consumable chemicals, reagent, glassware and other accessories / stationeries are required, so we need for financial support	2500000=00
➤ Subscription of Research Journals and laboratory manuals: It is essential to promote the research activities among faculties and research scholars, especially quality research in this college	500000=00
➤ Support for Travel concerned to Research activities/opportunities: To motivate the students and even faculties in the college, it is essential for promoting the research activities, especially quality & innovative research	700000=00
➤ Support for Publication and Patenting: It is also needful as a motivational tools for promoting the quality research among students, research scholars and faculties	700000=00
➤ Support for Consultancy and outsourcing: To facilitate and solve various task during completion research work, it will be required to take support services from other expertise and reputed organization as an outsourcing mode, so it is required.	700000=00
TOTAL	8000000=00
	(Eighty Lac only)

3. Extension Activities -

With a view to make the education more community based various outreach programs such as Blood Donation Camp, Health Camp, Disaster Management Programs, Sanitation, Road Safety, Weekend environmental issues are taken up through the NCC, NSS, Youth Red Cross unit of the college. Teaching learning activity has also performed by postgraduate students to school in local / rural area.

We have to elaborate and extend the extension activities of our students for the awareness and benefit of the society and holistic development of learners under different theme as mentioned below -

- Teaching learning activity by postgraduate students to school of rural area.
- Environmental and hygiene awareness program in tribal area
- Environmental awareness to the rural area near by industries
- Ethno-botanical Exhibition and Medicinal plants' application for society
- Biodiversity conservation and Plant protection awareness program
- Awareness program for students involving social and academic ethic
- Awareness program Cyber crime and security
- Health check-up and awareness program

To perform above proposed extension activities we require financial support department wise as mentioned below -

Sl. No.	Departments	Expenditure (Estimated)
1	Mathematics	200000=00
2	Physics	200000=00
3	Chemistry	250000=00
4	Botany	250000=00
5	Zoology	250000=00
6	Microbiology	250000=00
7	Biotechnology	250000=00
8	Geology	150000=00
9	Computer Science	250000=00
10	Information Technology	250000=00
11	Computer Application	200000=00
	Total	2500000=00

(Twenty five lac only)

4. Capacity Building Program -

The faculty members regularly participate and present research papers in National or International Seminars/ Conferences and also organizing Workshop/ Seminars/ Conferences in this institution. Department wise it has been proposed to organize National / International Seminar/Conference/Workshop and training program under capacity building program.

Under capacity building program, presently we are facing problem due to paucity of funds, whereas seminars/ symposia/ conferences were organized by the support of various external agencies but we are unable to facilitate our faculties for specialised training and their participation in workshop etc. in country or abroad. So we required the support for such activities under following heads -

I. Organizing National Seminars/ Symposia/ Conferences by the Departments-

Sl. No.	Organizing Seminars/ Symposia/ Conferences	Expenditure (Estimated)
	National	
1	Department of Mathematics	250000=00
2	Department of Physics	250000=00
3	Department of Chemistry	250000=00
4	Department of Botany	250000=00
5	Department of Zoology	250000=00
6	Department of Microbiology	250000=00
7	Department of Biotechnology	250000=00
8	Department of Computer Science & Application	250000=00
9	Department of Information Technology	250000=00
10	Department of Geology	250000=00
	International	
1	Interdisciplinary by Physical & Computer Science	650000=00
2	Interdisciplinary by Life Sciences	650000=00
	Total	3800000=00

II. Support to organize Instrumentation / training program

By the department of Physical Sc. / Computer Sc. / Life Science - **600000=00**

III. Support to Faculties for participation in training program / workshop at country or abroad

- **600000=00**

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GRAND TOTAL - 5000000=00
(Fifty lac only)

5. Career Counselling Program -

The college has a functional Career counselling & Placement cell which organizes the program concerned every year for various science disciplines. It is an essential program for students to achieve ultimate target of higher education. Under this program we invite experts from industries and other concerned sectors to provide realistic and factual counselling to students.

We have planned to organize more elaborated Career counselling and Placement Program, so to execute the proposed plan we require grants as below -

Sl. No.	Career Counselling For	Expenditure (Estimated)
	Undergraduate Students	
1	Mathematics Group	450000=00
2	Biology Group	450000=00
3	Computer Application	300000=00
	Postgraduate Students	
1	Mathematics	300000=00
2	Physics	300000=00
3	Chemistry	300000=00
4	Botany	300000=00
5	Zoology	300000=00
6	Microbiology	300000=00
	Total	3000000=00

(Thirty Lac only)

6. Industrial Visit/ Study Tour / Field Work -

The courses curriculum has been moderated and redesigned department wise as per UGC module and regional needs whereas the Seminar, Project work (internal & external), Field study, Modular course, Skill-based course and honors course have been introduced under semester pattern of Examination with continuous evaluation system.

We are also organizing Industrial visit, study tour and field study as per their subject concerned and need. At present we are organizing program with minimum support from college and with maximum contribution by the students.

As per course curriculum, to enhance the quality of education, we plan for adequate Industrial Visit / Study, Tour / Field work department wise. The intensification of program is the need of hour and without which proper exposure for field applicability is not possible, so we need support as follow -

Sl. No.	Departments	Expenditure (Estimated)
1	Mathematics	400000=00
2	Physics	450000=00
3	Chemistry	450000=00
4	Botany	450000=00
5	Zoology	450000=00
6	Microbiology	370000=00
7	Biotechnology	350000=00
8	Geology	280000=00
9	Computer Science	300000=00
10	Information Technology	250000=00
11	Computer Application	250000=00
	Total	4000000=00

(Forty Lac only)

7. Skill Development of Administrative staff -

Skill development Programs are variously organized by the departments in this college. Total eleven Skill-based courses are conducting for one semester in undergraduate program under open choice system.

Skill development plan is also a priority based program of our country with the aim to prepare students competent for the need of the society. Besides those skill-based courses, as conducted in this college, we have identified and planed to organize various Skill development program for Students, Faculties & Administrative staff for that we require financial support as mentioned below

Sl. No.	Skill Development Program	Expenditure (Estimated)
1	Gardening, Floriculture and Medicinal Plant cultivation	250000=00
2	Waste Management (Solid & Liquid)	250000=00
3	Food Preservation and Preparation Jam /Jelly & Bakery items	250000=00
4	Basic Computer application	150000=00
5	Biofertilizer/Bio-pesticide Production and Mushroom Cultivation	300000=00
6	Instrumentation Laboratory and home appliance	150000=00
7	Web Designing and Cyber Security	150000=00
	Total	1500000=00

(Fifteen Lac only)

8. Financial Assistance to Organize Coaching Camps During Summer & Winter Vacation for Various Sports -

In view of enhancement in education and research the extracurricular activities, general awareness and communicative skill with good exposure are also required under holistic education concept. Being a lead college it becomes our responsibilities to mentor other institutions and provide special coaching to students of this region for various competitive examinations. In this regard we have to plan to organize various coaching and workshop during summer & winter vacation, so required financial support as mentioned below –

Sl. No.	Proposed Activities	Expenditure (Estimated)
1	Coaching camp / classes for SET / NET	700000=00
2	Coaching camp / classes for Competitive examination	600000=00
3	Mentoring to other Institutions (Research & Technology)	600000=00
4	Training for Instrumentation & Computer Application in Research	600000=00
5	Coaching camp / classes for Communicative English	500000=00
TOTAL		3000000=00

(Thirty Lac only)

GRAND TOTAL

SOFT COPY: Rs. 35000000=00