

Executive Summary
of
Detailed Project Report (DPR)



Rashtriya Uchchatar Shiksha Abhiyan (RUSA) 2.0

Submitted to



Department of Higher Education
Government of Odisha
Bhubaneswar



Ministry of Human Resources Development
Government of India
New Delhi

By



UTKAL UNIVERSITY
Vani Vihar, Bhubaneswar

Executive Summary of the DPR, RUSA 2.0

Utkal University

Utkal University is the premier university of the state of Odisha currently celebrating its platinum jubilee (1943-2018).

The University has 28 departments with many recognized as specially assisted departments by National Bodies.

- i. UGC-Centre of Advanced Study: Anthropology, Economics, Philosophy and Psychology
- ii. UGC- Departmental Research Support (DSA/ DRS): Chemistry, Commerce, Physics, Botany, Odia, Geology, History
- iii. DST-FIST: Physics, Chemistry, Botany, Geology
- iv. DBT-HRD Program: Biotechnology

The University has collaboration with several nationally and internationally acclaimed universities/institutions for promotion of research

- i. CIPET, Bhubaneswar, Ministry of Chemicals and Fertilizer, Govt of India
- ii. Institute of Physics, Bhubaneswar; NISER, Bhubaneswar
- iii. National Council of Rural Institute, Hyderabad; Institute of Life Sciences (DBT-GoI); Institute of Minerals & Materials Technology (CSIR); Regional Medical Research Centre (ICMR); and AIIMS, Bhubaneswar
- iv. Max-Planck Institute, Germany (Physics)
- v. Universities of Tübingen & Goethe, Germany (Anthropology)
- vi. John Hopkins University, USA (Biotechnology)
- vii. University of Sussex, UK (Public Health)
- viii. University of Miami, USA (Rare Manuscripts)
- ix. RIKEN, Japan (Computational Biology) and so on.

National recognition

- i. The university has been recognized by MHRD as one among the top ten Universities in India to start mutual collaboration with national institutes such as Institute of Physics (DAE), National Institute of Science Education & Research (DAE); Institute of Life Sciences (DBT-GoI); Institute of Minerals & Materials Technology (CSIR); Regional Medical Research Centre (ICMR); and AIIMS Bhubaneswar to enhance the quality of teaching and research towards excellence.
- ii. The HRDC of Utkal University has been identified by the MHRD as National Resource Centre in Anthropology in 2018.

(i) The Department of Physics has pioneered the modern physics research in the state and has been identified as a model department under RUSA 1.0. Over the years, this department has produced a large number of students who have occupied eminent positions in India and abroad besides with three Bhatnagar awardees. The Department has acclaimed high reputation in theoretical research in high energy and condensed matter physics and currently a centre is created to strengthen the theoretical/experimental research in high energy and condensed matter physics particularly at the nano scale for applications in semiconductors, solar converters, magnetic materials and sensors. It also proposes to set up an ion accelerator for material characterization and diagnostics. It also aims at establishing a moderately high performance computing facility for multi-scale computation. Simultaneously, the centre will run a vastly improved curriculum in physics to produce students who are core competent to join and contribute to any international megaproject in this area.

(ii) Odisha has rich mineral wealth and exhibits great industrial diversity. Development of new materials with tailor-made properties is one of the major thrust areas in the contemporary research and holds the key for more efficient processes/sustainable technologies to meet the ever changing need of society in various sectors including Environment, Energy and Healthcare. The Department of Chemistry has expertise in the design and synthesis of new material and molecules for various applications. The department has been imparting an integrated M.Sc.-Tech. course on Materials Science & Technology in collaboration with CIPET (GoI) and established linkages with several research institutions in India and abroad for collaborative research of mutual interest. A Centre of Advanced Materials and Applications is proposed to strengthen infrastructural research base for interdisciplinary research and development activities in the broad areas encompassing advanced materials and their applications besides in-depth understanding of the complex interaction between the materials and their applications in energy, environment and health sectors. This will lead to strong industry interaction for technology oriented research as well as teaching and train manpower for research in the area of Material Science & Applications.

(iii) The recent agenda for Public Health in India includes the epidemiological, demographic and environmental transition. Odisha, being one of the coastal states is rich in bio-diversity. However, majority of the resources are unexplored for their therapeutic potential and dietary supplements. The faculty members of the University departments of Biotechnology, Zoology, Botany, Anthropology and Geography have the proven competency and expertise in the domain as evidenced by publications, extramural projects, and departmental support grants from various funding agencies. They are actively involved in research related to natural compound based therapeutics, environmental impact assessment on flora & fauna and green technology. The University and the participating institutes also have a state-of-art infrastructure in the relevant areas of research.

(iv) Departments of Economics, Sociology, Public Administration, Anthropology, Political Science, PMIR and allied disciplines have been pursuing extensive research works on existing public policies on national importance in the field of education, health, livelihood, industry, and marginalized communities and suggest appropriate policy measures for ensuring high economic growth, poverty eradication and creation of more employment. The faculty members of department of Mathematics, Statistics and Computer Science and Application have outstanding research skill on policy modelling. Now, the University proposes to amalgamate both the ethnographic methods of public policy research and modelling knowledge of the University through participatory policy design and assessment and multidisciplinary approach to develop a general standard framework for the pretesting and post-testing of the government policies.

(v) Government of Odisha has given an additional piece of land (66 acres) to Utkal University in 2017 for establishing a new campus with focus on rural landscapes and society. As a new campus it is focusing on competency and skill based courses keeping the contemporary need of rural India. In the past, Department of Economics had the distinction of hosting SBI Chair on Rural Economics and RBI Chair on Institutional Finance with focus on Agrarian and Rural Economy. Utkal also offered Masters Programme in Rural Development by the Department of Sociology recently. Departments such as Anthropology, History and Political Science have been carrying out extensive work on socially relevant research focused on rural communities. Through the Department of Agri-Management at MBA department, research competencies have been developed in areas such as rural entrepreneurship, technology transfer and capacity building of farmers. Department of Physics has worked on technology transfer on solar-based dryer for fishing communities through technical assistance from BARC and DBT. The recent attempt by Utkal to offer MBA in Rural Management, with academic support from National Council of Rural Institute, Hyderabad, in its rural-based new campus is looking to emerge as a global centre by promoting skill-based capacity building of rural

farmers, entrepreneurs and local level self-government functionaries by linking the rural expertise and need with the global centres of excellence.

(vi) Department of Personnel Management and Industrial Relation (PMIR), Psychology, Economics, Business Management, Sociology, and Agri-Management have extensively been teaching and pursuing research in labour studies, labour economics, farmer suicide, counselling, mental health, and migration. Utkal has collaboration with NALCO and NLI to improve quality and research activities on labour studies. Centre for Unorganized Labour shall attempt to advance the teaching, training and research on unorganized labour market / areas.

(vii) Studies in regional and tribal languages, culture and heritage have been the core competencies of departments such as Odia, Sanskrit, English, Ancient Indian History, Culture & Archaeology and Anthropology. In a collaborative project the departments of Computer Science and Odia have completed Phase-I and Phase-II of English-to-Indian Languages Machine Translation System. AIHC&A department has documented several temple architectures and taken initiatives to link them with tourism industry. Anthropology department has been conducting research on various aspects of tribal culture and endangered language, including among the Particularly Vulnerable Tribal Groups (PVTGs).

(viii) Utkal University is now moving from Odisha-centric University to international and cosmopolitan University ready to play a more meaningful role in the higher education scenario of the country. Utkal being situated at a strategic point in the eastern region of India, students and scholars from the North Eastern states can easily access it and engage in a pragmatic study of the North Eastern region. Many faculty members of Utkal have either studied or served in the North-Eastern region in various academic capacities and still keeping collaborative research and extension activities in areas related to North-East. The NCERT sponsored Regional Institute of Education is in academic collaboration with Utkal University. It receives many students from North-East India for masters and PhD program every year. In commensuration with the inclusive growth and the Look East policy of the Government of India, Utkal attaches outmost importance to the need of a collaborative effort of academicians, administrators, policy makers, civil society actors and activists interested in the North-East.

The work components and deliverables of the eight centres are given below.

| Research Areas / Centre | Work component | Deliverables |
|--|---|--|
| High Energy & Condensed Matter Physics | High Energy Physics, Cosmology and Neutrino Physics To develop facility for Nanoscale material characterization To develop High Performance Computing Facility (HPCF) | Developing competence of students to drastically upgrade R & I Output. Precise determination of the neutrino oscillation parameters. To establish High Current Ion Beam Facility. Cryogen free Physical Properties (AC/DC susceptibility and transport) Measurement System. Precision Cosmology with Cosmic Microwave Background Data Analysis. Precision Calculations in Nuclear and Atomic many body problems. Computational Material Science/Condensed Matter Physics Publications in referred journals Upgrade its curriculum to international standards |

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| Advanced Materials and Applications | <p>Carbon dioxide capture, catalytic conversion and molecular level understanding by computational studies.</p> <p>Nanomaterials for waste water treatment and sustainable energy.</p> | <p>Design and synthesis of new materials capable of CO₂ capture and storage and conversion to valuable chemicals.</p> <p>Theoretical studies of probable mechanism, molecular dynamics.</p> <p>Design and synthesis of functional / hybrid materials for remediation of environmental problem of the state.</p> <p>Development of high performing catalyst for alternative energy generation.</p> <p>To be a nodal centre of different working groups in the State of Odisha for developing efficient water treatment processes with a mission to provide clean and safe potable water to all.</p> <p>Publication and patent.</p> |
| Environment, Climate Change & Public Health | <p>This research hub will provide a strong scientific linkage of traditional & ethnopharmacological knowledge for the development of natural compound based therapeutics/ health supplements as antioxidant, anti-inflammatory, immunomodulatory and anti-proliferative agents. This will also address identification of predictive biomarkers for major metabolic/ non communicable diseases. The research hub shall also focus on issues related to greenhouse emission mediated climate change, impact of environment on flora and fauna, assessment of socio-economic loss, development of green technology to mitigate environmental pollution</p> | <p>Generation of new knowledge and bridging the existing gap between traditional practices and scientific knowledge.</p> <p>New formulation/ generation of new databases, quality publications, products, predictive biomarkers for important public health under investigation leading to patents.</p> <p>Development of green technology & natural compound based therapeutics as alternative practice for health and well-being.</p> <p>Developing new policy contours for future health sector</p> |
| Public Policy & Governance | <p>To examine the existing public policies in the field of education, health, livelihood, industry, marginalized communities and suggests appropriate policy measures for ensuring high economic growth, poverty eradication and creation of more employment.</p> <p>To formulate proto-type robust policy models for different developmental projects / policies / plans / programs</p> <p>To develop a Standard Framework for the Pretesting of the Government Policies before implementation</p> <p>To develop Big Data Analytic Skills.</p> | <p>Collaborative interdisciplinary research with at least one national and one international University / Institute.</p> <p>Support to government in formulation, implementation, monitoring and evaluation of policies and programs in the sector of health, poverty, forest, displacement and rehabilitation.</p> <p>Research publication</p> <p>Doctoral and post-doctoral outputs.</p> <p>Visual documentation of cases having policy implication</p> |

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| Global Centre of Rural Studies | <p>New courses to be opened</p> <ul style="list-style-type: none"> a) MBA (Rural Management) b) MA in Rural Development c) Diploma course on Post-Harvest Management d) Diploma Course on Farm Management <p>Thrust Areas</p> <ul style="list-style-type: none"> a) Rural Living Lab b) Centre for Study on Rural Enterprises and Entrepreneurship <p>Extension Activities</p> <ul style="list-style-type: none"> a) Rural Fairs for Interaction between Rural Producers and Consumers b) International Seminar on Rural Management/ Studies c) Rural Expo | <p>To provide skill and need-based, entrepreneurship oriented training to at least 500 local farmers and entrepreneurs who can be change-agents of rural livelihood in their respective areas.</p> <p>Inter-disciplinary research focused on rural health, economy, entrepreneurship and agriculture.</p> <p>Development of eco-friendly technology to cater to the needs of rural farmers</p> <p>Development of herbal garden and conservation of rare and endangered plant species.</p> <p>Comparative insight for rural engagement on an international platform</p> <p>Testing laboratory of Ideas of Indian Thinkers (Gandhi, Tagore, Sri Aurobindo) on rural existence on a global platform.</p> |
| Centre of Study of Unorganized Labour | <p>To act as a capability enhancement center offering training to workers engaged in unorganized sector</p> <p>To undertake research in collaboration with other agencies at regional, and national levels;</p> <p>To provide support to government and other agencies in policy formulation for transformation of labour standard</p> <p>To address the issues in implementation of policies relating to unorganized labour and to suggest remedial measures</p> <p>To help in sharing of knowledge among all social partners by publication of newsletter and journal of national repute.</p> | <p>Creation of database on unorganized labour in Odisha.</p> <p>Mapping of the skill gap in the workforce.</p> <p>Inter-disciplinary research on unorganized labour, migration, farmers' suicide leading to publications.</p> <p>Capacity building of un-organized labour</p> <p>Legal Aid to labourers</p> |
| Centre for Study of Languages, Culture & Heritage | <p>To engage in cultural studies of language research through translation, Polyglot Anthropology, Creative Writing and Children's Literature. Research focus on Odia language with special reference to natural language processing, historical semantics and textual analytics. Relevant documentation for preservation of tribal languages of the State. Archiving of archaeological traces and heritage of Odisha in the districts of Mayurbhanj, Keonjhar, Balasore, Bhadrak, Ganjam, Gajapati, Boudh and Kandhamal.</p> | <p>Creation of database of archaeological / sculptural remains of these districts where it does not exist.</p> <p>To focus on the fast depleting / moribund tangible heritage of these districts and preserve it for posterity.</p> |

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| Centre for North-East India Studies | <p>The Centre aims to study, and document the tangible and intangible cultural heritage of some selected North Eastern communities. The study and documentation includes different forms of their art, craft and performing art, sports and oral traditions, language and literature. It also aims to explore the rich biodiversity and traditional knowledge systems (such as Ethnomedicine), existing in North Eastern states and through interdisciplinary mode of research take attempts to validate them. It also plans to explore the sustainable travel practices that promote the conservation of protected natural areas, while also benefiting the local economies, in the light of eco-tourism in North Eastern states.</p> | <p>Validation of traditional knowledge systems that can be linked to the economy, health and development needs of the community on one hand and market on the other.</p> <p>Enabling local travel agencies in Odisha and in the North Eastern states to promote some ethno-tourist spots as tourist destinations in an effective manner.</p> <p>Publication of research papers and Monographs</p> <p>Connecting the cultures and developing inter-cultural competencies</p> <p>Youth exchange program for building bridges of future leadership between North-East and Odisha</p> |
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Detailed annual financial plan of expenditure for two years with an annual break up, for total not exceeding ₹100 crore

| S.N | Parameter | Period I (2018-19) in ₹ crore | Period II (2019-20) in ₹ crore | Total in ₹ crore |
|-----|--|-------------------------------|--------------------------------|------------------|
| A. | Improvement of Quality in Teaching and Learning | | | |
| 1. | Engagement of Adjunct faculty / Visiting faculty / Emeritus Professor from Industry, Government, NGOs (<i>Persons of Eminence</i>) | 1.5 | 2.5 | 4.0 |
| 2. | Adjunct faculty / Visiting faculty / Emeritus Professor from foreign | 2.0 | 2.0 | 4.0 |
| 3. | International and National Academic Networking and Collaborations | 0.4 | 1.0 | 1.4 |
| 4. | Faculty Improvement Program (Training & Short Term Courses) | 0.25 | 0.75 | 1.0 |
| B. | Research and Innovation | | | |
| 1. | COE in High Energy & Condensed Matter Physics (Identified as Model Department under RUSA 1.0) | 4.0 | 6.0 | 10.0 |
| 2. | Budget estimate of other research centers | | | |
| 2.1 | Post-Doctoral Fellow | 1.30 | 1.30 | 2.60 |
| 2.2 | Conference/Seminar/ Workshop / Training | 0.3 | 0.22 | 0.52 |
| 2.3 | Furniture / Fixture | 0.4 | 0.3 | 0.7 |
| 2.4 | Field Work / Lab Consumables | 0.8 | 0.6 | 1.4 |
| 2.5 | Documentation / Photography / Publications | 0.5 | 0.62 | 1.12 |

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| 2.6 | Incentive to faculty members based on achievements, awards, research publications | 0.3 | 0.3 | 0.6 |
| 2.7 | Travel (National / International) | 0.3 | 0.39 | 0.69 |
| 2.8 | PhD Fellow / Research Assistant / Technical Assistant | 0.78 | 0.78 | 1.56 |
| 2.9 | Equipment | 3.7 | 3.0 | 6.7 |
| 2.10 | Hiring Technical Services / Secretarial Assistants | 0.35 | 0.35 | 0.7 |
| 2.11 | Contingencies | 0.35 | 0.35 | 0.7 |
| 3. | Research Plans for all Departments | | | |
| 3.1 | Start-up Grant for faculty at Entry-Level | 0.5 | 0.5 | 1.0 |
| 3.1 | PDF (National Post-Doc) | 1.2 | 1.2 | 2.4 |
| 3.2 | PDF (International Scholars) | 0.25 | 0.25 | 0.5 |
| 3.2 | Teaching / Research Asst. | 0.5 | 0.5 | 1.0 |
| 3.3 | Organizing Conference / Seminar / Workshop | 0.3 | 0.3 | 0.6 |
| 3.4 | Support to Faculty Members for attending International Conference / Workshop | 1.0 | 1.0 | 2.0 |
| 3.5 | Travels / Field facilities / Field trips for Faculty (Domestic) | 0.5 | 0.5 | 1.0 |
| 3.6 | Hiring the services of Technical / Industrial / Secretarial assistance as relevant to the Program | 0.41 | 0.5 | 0.91 |
| 3.7 | Fellowship to PhD Scholar (National Students) | 0.2 | 0.2 | 0.4 |
| 3.8 | Fellowship to PhD Scholar (International Students) | 0.25 | 0.25 | 0.5 |
| 3.9 | Stipend to Non-Fellowship PhD Scholar for Documentation of PhD Thesis | 0.1 | 0.1 | 0.2 |
| 4. | Establishment of traditional technology and soft skill park | 0.6 | 0.4 | 1.0 |
| C. | Library and Learning Resources | | | |
| 1. | Library Resources | 3.0 | 5.0 | 8.0 |
| 2. | Computer and ICT Infrastructure | 2.0 | 2.0 | 4.0 |
| D. | Community Linkages and Networking | | | |
| 1. | Plan for Involvement of Alumni | 0.1 | 0.1 | 0.2 |
| 2. | Mentoring of Affiliated Colleges for Accreditation | 0.1 | 0.1 | 0.2 |
| 3. | Industry-Academia Partnership | 0.1 | 0.1 | 0.2 |
| 4. | Community Linkages (Adoption of villages, residency for trainee / participant, travel and transport for outreach and rural connectivity: hiring vehicle, procurement of vehicle and maintenance of it, engaging driver) | 0.4 | 0.5 | 0.9 |
| E. | Enriching Students | | | |
| 1. | Scholarship to Meritorious Students Master | 0.15 | 0.15 | 0.3 |
| 2. | Fee Waiver / support to for Meritorious-cum-economically weaker students / PWD | 0.05 | 0.05 | 0.1 |

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| 3. | Engagement of regional co-ordinators for catchment of students / counselling / admission / research facilitation | 0.4 | 0.7 | 1.1 |
| 4. | International Student Exchange Program | 0.1 | 0.1 | 0.2 |
| 5. | Start-up grants for developing entrepreneurial activities among Students | 1.5 | 1.5 | 3.0 |
| F. | Governance & Transparency | | | |
| 1. | Governance Plan for Transparency, Accountability and Efficiency | 0.3 | 0.4 | 0.7 |
| 2. | Administrative plan for Accreditation / World Ranking | 0.0 | 0.1 | 0.1 |
| 3. | Staff Excellence | 0.2 | 0.3 | 0.5 |
| G. | Hard Component including Equipment | | | |
| | I. Infrastructure Development (New Construction) | | | |
| | <i>International Hall</i> | 1.0 | 1.0 | 2.0 |
| | <i>Student Utility Centre</i> | 1.0 | 1.0 | 2.0 |
| | <i>Academic Block</i> | 2.0 | 2.0 | 4.0 |
| | <i>Administrative Block</i> | 2.0 | 2.0 | 4.0 |
| | <i>Market Complex</i> | 0.3 | 0.2 | 0.5 |
| | <i>Alumni/IQAC/RUSA Secretariat</i> | 0.5 | 0.5 | 1.0 |
| | II. Infrastructure Development (Renovation / Up-gradation) | | | |
| | <i>Academic Blocks including toilets</i> | 1.0 | 2.0 | 3.0 |
| | <i>Administrative Block</i> | 0.2 | 0.3 | 0.5 |
| | <i>Laboratory</i> | 1.0 | 1.0 | 2.0 |
| | <i>Campus Development (Water supply, Drainage, Water Harvesting & Alternative Source of Energy)</i> | 1.5 | 1.9 | 3.4 |
| | <i>Canteen</i> | 0.1 | 0.2 | 0.3 |
| | <i>Auditorium</i> | 0.5 | 0.5 | 1.0 |
| | <i>Ladies Hostel (Visitor's Lounge)</i> | 0.1 | 0.2 | 0.3 |
| | <i>Playground</i> | 0.1 | 0.2 | 0.3 |
| | III. Equipment for all departments | | | |
| | Laboratory Equipment including energy saving / efficient vehicle to run in the campus | 1.5 | 2.5 | 4.0 |
| H. | Contingencies (1% of the total grant) | 0.5 | 0.5 | 1.0 |
| I. | Project Implementation Cost / PMU | 1.0 | 1.0 | 2.0 |
| Grand Total in ₹ crore | | 45.74 | 54.26 | 100 |