HEC IDENTIFIED PRIORITY SUBJECTS THROUGH NATIONAL CONFERENCE

Veterinary Sciences

- Quality assurance, quality control, food safety and hygiene for livestock products
- Value addition in livestock products
- Reducing use of antibiotic in animal health management to enhance export of
- livestock products
- Value chain development and market linkages establishment
- Genetic improvement in livestock breeds
- Genetic adaptations to meet growing demands in livestock products
- Economical feed production using indigenous resources for efficient milk and meat production
- Improved feeding systems' adaptations at local livestock farmers
- New technological advancement in livestock feeding
- Rural / domestic poultry farming for enhanced socio-economic benefit of rural communities
- Improved livestock management practices for enhanced productivity
- Developing and implementing disease surveillance system
- Developing local economical and effective vaccines
- Developing standard disease handling protocols
- Developing advanced clinical approaches to handle livestock diseases having major economic impact
- Strengthening field clinical services for animals
- Developing new methods of disease diagnostics through technological advancements
- Genetic modifications and use of molecular biological and biotechnological advancements in enhancing livestock productivity
- Economic evaluation of livestock businesses
- Value chain and marketing models for livestock products.

 Human resource development and management for livestock businesses particularly for commercial sectors to enhance investments.

Biological Sciences

Research in Biological sciences is required in the following areas keeping in view above research perspectives.

- Mechanisms of intracellular membrane trafficking
- Physiological regulation of the secretory pathway
- Regulation of cell motility and Subcellular imaging
- Biogenesis of organelles and membrane compartments
- Programmed cell death and Cell fate determination
- Embryonic development of multicellular animals
- Signal transduction and cytoskeletal organization
- Tissue morphogenesis and Gene regulatory networks
- Early embryo patterning
- Evolutionary developmental biology
- Genomes and genomics

Medical Sciences

Genomic sciences/ Personalized Genomic Medicine, Translational Medical science, Stem Cell Research, Cancer Epidemiology, Muscular Skeletal disorder, Regenerative medicine

Medical Robotics, Genomics and Proteomics, Nano Medicines, Bio Sensors, Medical Apps

Clinical and nursing Research, Bioinformatics & Medical Databases

Physical Sciences

•	Ph'	ysics

- Astrophysics, Atmospheric physics, Computational, Materials, Particle, Plasma physics
- Biomechanics, bio Photonics
- Cosmology
- ? Electromagnetism
- Geophysics
- Nano Technology
- Vacuum Physics
- Medical physics
- Optics, Polymer physics, Solid state physics, Theoretical physics
- Space Sciences
- Physics Oceanography

• <u>Computer Sciences</u>

- Algorithms and Computational Complexity
- 2 Applications of Artificial Intelligence
- Computational Biology
- ? Computational Neuroscience
- Computer Graphics
- Computer Systems
- Data Mining

? Data Visualization ? Digital System Design ? **Distributed Systems** ? Hardware Design And Implementation ? Introduction To Artificial Intelligence ? **Neurobotics** Parallel Algorithms, Grid Computing ? ? Randomized Algorithms And Probabilistic Analysis ? **Software Engineering** ? **Software For Embedded Systems** ? The Hardware/software Interface ? Robotic Cryptography **Mathematics** Abstract Algebra ? **Analysis** ? **Applied Mathematics** ? **Classical Mechanics** ? Complex Analysis ? **Computational Geometry** Computer Algebra / Cryptology ? ? **Differential Geometry** ? Discrete Mathematics ? **Dynamical Systems**

?

Fluid Dynamics

?	Fluid Mechanics
?	Industrial Mathematics
?	Linear & Nonlinear Programming
?	Linear and Matrix Algebra
?	Mathematical Biology
?	Modelling and Simulations
?	Multivariable Calculus
?	Numerical Analysis
?	Optimization Theory
?	Ordinary Differential Equations
?	Partial Differential Equations
?	Real Analysis
?	Topology
?	Trigonometry
?	Financial mathematics
?	Algebraic Geometry
10	Earth, Atmospheric and Planetary Sciences
?	Advanced Igneous Petrology
?	Analytical Techniques for Studying Environmental and Geologic Samples
?	Atmosphere, Ocean and Climate Dynamics
?	Atmospheric Chemistry
?	Atmospheric Physics and Chemistry
?	Atmospheric Radiation
?	Basics of Impact Cratering & Geological, Geophysical, Geochemical, Environmental

Studies

?	Dynamics of Complex Systems: Biological and Environmental Coevolution Preceding the Cambrian Explosion
?	Environmental Earth Science
?	Field Geology I
?	Fluid Dynamics of the Atmosphere and Ocean
?	Geodynamics
?	Global Climate Change: Economics, Science, and Policy
?	Global Warming Science
?	GPS: Where Are You?
?	Introduction to Astronomy
?	Introduction to Geology
?	Introduction to Observational Physical Oceanography
?	Introduction to Seismology
?	Marine Chemistry
?	Modeling Environmental Complexity
?	Oral Communication in the Earth, Atmospheric, and Planetary Sciences
?	Petrology
?	Principles of the Global Positioning System
?	Sedimentary Geology
?	Structural Geology
?	Structure of Earth Materials The Environment of the Earth's Surface
?	The Environment of the Earth's Surface
?	The Solar System
?	Thermodynamics for Geoscientists
?	Trace-Element Geochemistry

? Turbulence in the Ocean and Atmosphere ? Mountain Hydrology, National Disaster Management ? Water Management ? Dimension stone geology **Statistics** Algorithms for Inference, Inferential Statistics ? ? **Applied Spatial Statistics** ? **Applied Statistics** ? Data analysis Data and Models ? ? **Data Mining and Analysis** ? Data Mining and Machine Learning ? Data Mining: Finding the Data and Models that Create Value ? **Decision Theory** ? **Econometrics** Financial Models and Statistical Methods in Risk Management ? ? Information theory ? Introduction to Bayesian Analysis/Statistics **Multivariate Statistics** ? ? Nonparametric Statistics ? **Probability and Statistics** ? Reliability and Validity **Statistical Method in Economics** ?

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Stochastic Processes

- Time Series Analysis
- Sampling Analysis
- Actuarial Sciences
- Risk Analysis

Arts & Humanities

- Folklore, music, dance, puppetry, indigenous sports and festivals
- Promotion of indigenous craft and its development to boost cottage industry (wood craft, metal craft, ceramics, textiles, embroidery, musical instruments makings and jewelry).
- Community development
- Community awareness
- Development of infrastructure in the society
- Harmony in the different sects of the society
- Civic sense
- Media ethics and law
- Citizen responsible role
- Population education
- Philosophy of Law
- Focus on improving design education for communication, Industry (furniture,
 ceramics, shoe, knitwear, textile, carpet, Automobile and other gadgets)
- Role of Women in Media
- Theatre crafts



EDUCATION COMMISSIO

Business Education

The group came up with that the following core areas that need to be negotiated with strong and timely planning for national coherence and unanimity.

- Introduction of Doctorate in Business Administration.
- Entrepreneurship
- Operational Management
- Islamic Banking
- Venture Financing
- Franchising
- Brand Management Development
- Project Management
- Corporate Governance
- International Finance
- Supply Chain Management
- Product designing

SOCAIL SOCIENCES

Priority Areas for Future Research

- Human security
- Armed violence
- Extremism
- Public safety and security
- Water and energy security
- Pakistan's economic growth trajectory
- Governance
- Rise of China and India: Implications for Pakistan
- Pakistan's role in changing world order
- Pakistan's changing demographics

- Future role of media
- Future role of Pakistani diaspora
- Role of IT sector
- Archaeology and Tourism
- ANTHROPOLOGY

Specific areas of research within the broader field

- Social & Public Policy
- Medical Anthropology for improved public health
- Civil Engagement in Higher Education
- Cyber Anthropology
- Visual Anthropology and advocacy
- Applied Anthropology
- Anthropology of Religion
- Development Anthropology

Particular title of research

- Using Anthropological lens to enhance the socio-economic conditions in Pakistan.
- ARCHAEOLOGY

- Cultural Heritage Management
- Museums Management Studies
- Cultural heritage & Tourism in Pakistan
- Landscape / Settlement Archaeology
- Environmental Archaeology
- Field Archaeology
- Prehistory & Study of Inscriptions discovered from different archaeological sites of Pakistan
- Study of Civilizations (Stone ages in Pakistan, Indus Civilization & The Harappan Culture, Vedic Period & Gandhara Civilization, Muslim Civilization)

Natural Sciences and Archaeology, Conservation, Zooarchaeology,
 Archaeobotany, Chemistry and Archaeology, Palenology, Forensic Archaeology.

Particular title of research

Promotion of Tourism: Archaeological Explorations and Excavations in Pakistan

BEHAVIOR SCIENCES

Specific areas of research within the broader field

- Rural and Remote Mental Health and related issues
- Group Dynamics and Functioning of communities (Issues, Problems, Strengths of Mountainous/Rural/Urban Societies)
- Globalization and Cultural identity
- Globalization and Development Rural Sociology
- Socio-Cultural Anthropology
- Clinical Psychology
- Counseling (Career)

EDUCATION

Specific areas of research within the broader field

- Education Policy, Planning and Management
- Assessment Practices and Evaluation at Different levels
- Technical and Vocational Education
- Professional Development, Approaches and Practices
- Education: Relevance and Equity
- Curriculum Development
- Global trends in education
- Comparative Education
- Teaching Pedagogics

Particular title of research

- Quality and Equity in educational governance.
- Supporting schools through university-school partnership for STEM (Science, technology, engineering, math) education.
- Teaching Strategy related to learning, psychological needs of students.
- New trends in Assessment.
- Teachers subject content knowledge and professional development.
- Technological literacies in Teacher Education.
- A conceptual framework for developing university industry relationship.
- Developing a model for academic entrepreneurship through university-industry partnership.
- Existing formative assessment practices; Development of formative assessment competencies among teachers of different levels.
- Re-engineering teacher education programs keeping in view the global trends in teacher education.
- Comparison of curricula of school and university education in Pakistan with curricula of developed countries.
- Promoting good citizenship competence in Pakistani students keeping in view the experiences of developed countries.
- Promoting national cohesion in national curriculum through consensus.
- Designing curriculum according to contextualized multiple intelligences for higher education level.
- Developing curricula for global citizenship.
- Constructive instructional model for teaching at higher education level.
- Stakeholders' perceptions about national standards for curriculum with reference to socio-economic needs of the country.

GEOGRAPHY

- Impacts of Climate Change
- Sustainability and related issues
- Frequency of hazards and mitigation measures
- Climatology and Meteorology including paleoclimate studies

- Flood hazards modelling
- Urban Geography and Management Issues
- Land and water resource management in mountains and plain

- Water resources and temperature changes
- Frequency of floods and damages both in plain and mountainous areas
- Management of available resource at village level
- Impact of climate change on agriculture and water resources

HISTORY

Specific areas of research within the broader field

- Revisionist Approach to History Writing
- Issues on Governance / State Functioning
- Histography/ Philosophy of History
- Multi- disciplinary research focusing Pakistan
- Re-structuring of political ideology and system
- Regional history of the areas which are part of Pakistan
- Specialization on China, U.S and European History

Particular title of Research

- Sectarianism and National Integration in Pakistan: Search for a recipe of conciliation.
- Culture, ethnicity, movements, issues of governance and democracy.
- The British Motives behind not settling the fate of Princely States of India: A case study of the Jammu & Kashmir.
- Pakistan's relations with the major powers cost and benefit analysis.
- A historical view of changing facets of Pakistan's role in the regional organizations.
- Socio-economic development in Pakistan: Learning from the past experiences.
- The element of trust deficit in Pak US relations: Search for a recipe amidst

ideological differences.

- Creating an accommodative structure for legislature and politics.
- > INTERNATIONAL RELATIONS

Specific areas of research within the broader field

- Conflict Resolution
- Terrorism and its Implications
- Challenges of Extremism, Sectarianism and Armed Violence
- Nuclear Issues and Non-Traditional Security
- Energy Security in Pakistan
- Pak-China Economic Corridor
- Regional and international Economic Cooperation
- Globalization and its impact on Local Culture
- International Political Economy
- International Law
- Pak-India Relations; Kashmir Issue, Glaciers and Water resources issues
- Central Asian Studies
- China and Gwadar Port
- Foreign Policy of Pakistan
- Forced Migration studies
- Community Conflicts
- Corruption and Accountability

Particular title of research

- Emergence of ISIS in Middle East: Implications for South Asia.
- The War on Terror: Pukhtun culture and terrorism in FATA.
- Trust and Mistrust: A case of Pak-Afghan Relations.
- Global internal displacement: A case of Pakistan.
- Water Dispute between India and Pakistan.
- Civil Military Relationship: Implications for Democracy.
- Vibrant Judiciary, Challenges and Implications.

- Corruption and Accountability; Challenges for Governance.
- Middle Eastern Issues; Oil Politics and Security.

JOURNALISM & MASS COMMUNICATION

Specific areas of research within the broader field

- Peace Journalism conflict sensitivity and promotion
- Technology, education and the role of media
- Globalization and its effects on media society
- Representing Pakistan in the Global Media
- Media, Policy making and Regulations Communication Ethics
- Health Communication
- Electronic Journalism
- Cultural and Intercultural Communication
- Development Support Communication
- Media and Governance
- Film analysis and Production
- Advertising and Public Relations

LAW & LEGISLATION

- Fundamental and International Human Rights
- International Trade and Economic Law
- Alternate Dispute Resolution (ADR)
- Legal Education System in Pakistan
- Judicial System in Pakistan and access to Justice
- Law Curriculum
- Law; Trade and Justice
- Intellectual Property Rights

- The Reformation in the Judicial System of Pakistan
- The Reformation of Legal Education System in Pakistan
- Economic assistance and international trade through legal and political empowerment
- Trade law and Intellectual Property Implementation of UN Conventions and Obligations
- Law Studies; Curriculum design as per indigenous needs

LIBRARY & ARCHIVAL SCIENCES

Specific areas of research within the broader field

- Digital Libraries & Networking
- Library Management
- Online usage of Library

PHILOSOPHY

- Cognitive Sciences and Philosophy
- Philosophy of Religion/Comparative Study of Religion
- Muslim Modernist Thinkers
- Iqbal and Muslim Modernist Philosophy
- ljtihad
- Human Rights, Ethics and Political Philosophy
- Feminist Philosophy of Pakistan
- Environmentalism
- Western Philosophy
- Epistemology
- Metaphysics

- Islam and the role of Reason
- Mind-Body dualism
- Environmental Ethics

POLITICAL SCIENCE

Specific areas of research within the broader field

- Peace and Conflict Resolution
- Political Integration and Social Harmony
- Radicalism, Extremism and Fundamentalism
- War & Security, Foreign Policy and Diplomacy
- Governance, leadership, Administrative Management and Corruption
- Democratization, Constitutional and Parliamentary affairs
- New Economic Trends, Political Economy and poverty
- Women Empowerment

Particular title of research

- Changing Patter of Women Politics in Traditional Society: A Case Study of Khyber Pakhtunkhwa.
- FATA: Tribal Transformation in Pakistan- A Case Study of Mahsud Tribe.

PHYCHOLOGY

- Psychology of peace and terrorism
- Attitude change in society
- Family Psychology & Counseling
- Community development
- Cross Cultural Psychology

- Emotional & behavioral Problems and development of children & adolescents and mothers
- Indigenous screening tests for abnormal behavior, employee selection & training
- Indigenous methods for treatment of psychological disorders
- Public acceptance of emerging technologies
- Learners with special needs/ mood disorders
- Stress management among senior citizens
- Organizational behavior of the employers and employees, Work engagement
- Personality development of adolescents
- Prevention and intervention strategies for psychopathology
- Employee Training & Development and conflict resolution in Teamwork
- Latest advance in measurement and Analysis f or psychology
- Behavioral Nano-sciences
- Gerontology
- Agricultural Psychology
- Environmental Psychology
- Sports Psychology

- Psychological impact of war and terror
- Internal displacement: incidence of depression
- Assessment of effectiveness of international plan for crisis situation
- Identification of population characteristics for psychological problems
- Curriculum: cognitive maturity
- Assessment of behavioral problem/adjusted problems of adolescents
- Development and validation of indigenous family therapy modules
- Psychological ownership, organizational commitment, and organizational performance in middle managers and project leaders
- Decision-making styles and acceptance of innovative technologies in small scale farmers of Pakistan
- Impact of loneliness and social relationships on the quality of life of senior citizens
- Assessment procedures for screening high school students with emotional and

behavioral problems

- Water-conserving behaviors & strategies in water-scarce areas in Pakistan
- Role of rumination & forgiveness in Coronary heart diseases
- Public awareness and acceptance of Nano-products in Pakistan
- Development of non-verbal intelligence scale for adolescents
- Control of Crime Rates by Implementing Personality Traits
- Controlling Anxiety Level of Players

Specific areas of research within the broader field

- Public Policy issues and Governance
- Development Studies
- E-Governance
- Theories of Governance
- Local and community models of development

Particular title of research

- IDPs, war on terror, counter-radicalization
- > RELIGIOUS STUDIES

- Approaches to the Study of Religion
- Management of Mosques, Trusts and Endowments
- Intra-Muslim Relation for Constructive Engagement
- The Impact of Globalization on Ethics
- Ethical Issues in Science and Technology
- Feministic Elements within Religion
- Comparative studies of Religions
- Interfaith Harmony
- Concept of Governance in Islam
- Revealed and non-Revealed Religions a comparative study

- Misunderstanding and its solution in the light of Shariah
- Religious Codes of Professional Ethics and Harassment at working place
- Success and failure of Islamic Banking
- Intertextuality of religious texts
- Study of religious through different approaches (Psychological, Social)
- International Relations and religions

- The Study of Islam in terms of Religion, Community and Civilization and its Global Interaction.
- The impact of religion on human behaviors during last ten years.
- Implementation of Islamic banking system.
- Need of Economic Justice.
- Tax System of Islam in the light of Pakistani Economic System.
- Study of Islamic Banking in Europe and Americas.
- Contemporary Issues and Challenges in the Muslim World.
- Islam and Pluralism.
- Postmodern Philosophy of Religion.
- A Comparative Study of Religious Ethics.
- The Study of Issues challenging the Credibility of Islam: Myths and Facts.
- Islamic Perspective of Gender Issues and Family Life.
- Our Economic System in the light of Islam: Implementation of Islamic teaching in the system.
- Religious Economic Introspective dialogue to explore the dimensions regarding religious Tolerance

SOCIAL WORK

- Loopholes in the Welfare system of Pakistan
- Issues Pertaining to Criminal Justice

- Peace and Conflict
- Population Studies
- Development Studies

- Evolving Cultural based Conflict Resolution Strategies.
- Encouraging inter-faith dialogue in pluralistic society of Pakistan.
- Police Training on Counter Terrorism Strategies in Pakistan.
- The state of Child rights in Pakistan.
- Social Security System of Pakistan.
- Rehabilitation of Offenders.

SOCIOLOGY

- Crime & criminality
- Sociology of Security
- Race, ethnicity and minority
- Over population & Management
- Gender inequalities in social life
- Public Health & Community Development
- Food insecurity
- Changing Family Pattern
- Youth and social problems
- Urban & Rural Sociology
- Political Sociology
- Social Demography
- Sociology of Mass Media
- Modern Sociology & Changing prospects
- Environmental Sociology
- Sociology of Development
- Sociology of Environment

- Road Safely in Pakistan
- Migration Studies

- Impacts of Militancy in war affected areas.
- Role of Mass Media in Bringing Social Change in Society.
- Cultural Problems and Nomadic Societies.
- Impacts of Population Movement and Economic Development.
- Social Welfare and Progressive Society.
- Causes and Consequences of over population.
- Urbanization: Causes and control strategies.
- Gender Issues Regarding Changing Family Pattern.
- Socio economic factors affecting material health care utilization.
- Impact of social teams' formation.
- Social inequality and its changing prospects.
- Social Construction of technological system.
- Road Accident and its socio-economic impact.
- Inheritance in Property: Gender Discrimination Practices

Development Studies

- Equity and equality
- Dynamics of an
- Dynamics of grass-roots level development
- Determinants of conflict
- Measurement of Poverty
- Multidimensional indicators

- Livelihood indexation
- Segregation of gender based data
- Gender sensitive planning and budgeting
- Environmental conservation
- Participation and social inclusion
- Advocacy and social mobilization
- Strategies for controlling population explosion
- Strategic implications of demographic trends in Pakistan
- Assessing the socioeconomic and environmental factors for child nutritional status in Pakistan
- Anthropological approach to social equalities
- **Economics**

A. Core Areas

- Macro Economics
- Micro Economics
- Econometrics

B. Specialized Subjects

- Development Economics
- Monetary Economics
- International Economics
- Public Economics/ Public Finance
- Labor Economics
- Financial Economics

C. Policy Areas

- Agriculture Economics
- Economics of Water Resources
- Energy Economics
- Institutional Economics
- Economics of Education
- Industrial Economics

The members of the Economics group after through deliberation has identified following specific areas of research in Economics:

- Energy Pricing, Energy Demands/Supply, Alternative Energy Sources
 Sustainable.
- Development Goals (SDGs), related Areas.
- Agricultural productivity/pricing/food security.
- Revenue generation, expenditure rationalization, NFC award.
- Human capital development.
- Economic and strategic benefits of CPEC to Pakistan.
- Trans boundary issues relating to water distribution in Pakistan.
- Transactional Cost and its impact on agricultural markets.
- Effects of structural transformation on growth and poverty alleviation.
- Poverty alleviation through human and social capital.
- Impact of social entrepreneurship on poverty alleviation.

NEW HIGHER EDUCATION TRENDS

Priority wise trends in Higher Education (Each subject will be considered under its own discipline)

- Renewable Energy
- New Materials
- Molecular & Cellular Sciences
- Technology & Innovation Management
- Nano Technology
- Medical Engineering & Medical Physics
- E-Governance & Management
- Environmental Engg Management
- Sc. Tech & Innovation Policy
- Cyber Security
- Robotics
- Earth Sciences
- System Design & Development
- Artificial Intelligence
- Bioinformatics

Forensic Sciences

