

Ph.D. topics from Prof. U.S. Dixit

Email : uday@iitg.ac.in

Topic 1: Sustainable Food Grain Storage Practices of North-East India

It has been observed that about 10% food grain is wasted every year due to poor storage facilities. Some government and private agencies have taken efforts to develop modernized warehouses, but many of them are not sustainable from the view point of economy, environment and society. North-East region of India has a very distinguishing climate and social structure; hence, a generalized solution for whole India is not optimum in the context of northeastern region. On the other hand, tribes of this region had very unique grain storage system, which has weakened due to modernization. There is a need to revisit the old practices and adopt them for 21st Century. Hence, there is need to (1) study the existing practices of food grain storage in various state of North-East India and (2) suggest appropriate modification in those practices so that they can be competitive in this era. Some preliminary study on storage practices in Arunachal Pradesh has already been done, but a lot of study is needed for the whole Northeastern India.

Topic 2: Exploring Science and Technology from Puranas

The Puranas are ancient Indian literature narrating the history, culture, philosophy and practices prevalent in India. The Puranas narrate the stories about the genealogies of gods, sages and kings. In the modern era, these stories are associated to address the concepts of cosmology, geography and Hindu philosophy. The storied format of the Puranas are selected as ancient resource for this topic. The project proposes to focus on Puranas with the following objectives:

- A systematic review of Puranas
- Enumerating the concepts of science, engineering and technology available in Puranas
- Categorizations of the above concepts into different domains of science and technology
- Correlation between ancient technology with modern advancements

It is now well established that advanced science and technology in the different domains starting from cosmology to materials have existed in ancient India. The recent developments in advanced science, engineering and technology appear to re-visit and re-create the ancient technologies. This has motivated the researchers and scientists to revisit the ancient literatures for developing biomimetic and sustainable processes and products for the wellbeing of mankind. Project aims to revisit Purana in modern context.

Topic 3: History of Science and Technology of India

India has been very strong in Science and Technology since times immemorial. Most of the knowledge passed from generation to generation in non-documented form. There are some dark periods too, mostly during the period of foreign rulers. Modern historians could not provide an elaborate account of scientific and technological traditions of India due to paucity of archival material. There is a need to explore the rich heritage of India following special research methodology. This is a herculean task. Hence, depending on the interest of the candidate, the scope has to be focussed. For example, a topic can be “Transportation Technology in Ancient India” or “Metal forming practices of India” and so on.

Ph.D. topics from Prof. Ramagopal Uppaluri

Email: ramgopal @ iitg.ac.in

Topic 1: Rational Explorations of Holistic Wellness Systems of North-east India

Herbal and mind-body medicine systems are well known Indian knowledge Systems in the ancient era. Ayurveda and Astanga Yoga are well known classical treatises of India that provide an exhaustive understanding into herbal and mind-body medicinal systems respectively. Given the well understand pedagogy of these Indian medicinal systems, the thesis area broadly aims to understand such similar systems in the North-east India. Thereby, scientific and psychiatric tools will be deployed to evaluate upon their rationality in improving the human wellness through a low cost medicinal system. The first phase of the PhD thesis involves the appropriate identification and collection of important herbs of the region that are consumed as herbal medicines for treatable ailments such as cough, cold, fever, blood pressure and diabetes. Thereby, modern scientific tools will be deployed to corroborate with the modern scientific understanding. The second phase of the thesis will target the psychiatric evaluation of the popular mind-body medicinal systems of the North-east India that served very well as an ancient medicinal system. Thereby, a comparative analysis of the established medicinal knowledge systems in the region will be targeted by considering conceptual synergies with Ayurveda and Astanga Yoga.

Topic 2: Preparation and Characterization of North-east India Herbs-Milk/Water extract based Dried Wellness Products

Deploying the well-known methodology of Kwaths and Ksheerapaka in the Ayurveda pharmaceutical product development and application, the PhD thesis devotes towards the development of simpler process to achieve north-east herb - milk/water extract to serve as a dried wellness product. Alternate inexpensive extraction and drying methods will be followed. Thereafter, for the liquid and solid extract products, nutritional, HPLC and HPTLC characterizations, in-vitro digestion and storage studies will be targeted to understand the efficacy of the liquid and solid product towards effective human consumption. The long term scope of the project will focus towards the establishment of generic process-product methodology and develop low cost water/milk extraction based north-east herb based products for wellness and herbal medicinal applications.

Topic 3: Role of Indian Philosophy to Improve Upon Values in High School Educational System of Guwahati

Ancient Indian knowledge systems inculcate values based on Indian philosophical schools of thought. While a formal system may not exist for the Indian philosophy to percolate into the high school education, the school teachers are primarily responsible to cultivate values in the school students. Based on a questionnaire based approach, the PhD thesis will identify core values being emphasized in the high school education system based on the general education and Indian philosophy based education. The survey based analysis and introspection will be devoted to the schools of Guwahati. Also, emphasized core values will be classified into primary, secondary and higher secondary school levels and accordingly significant gaps between cultivated values and emphasized Indian philosophy based values will be identified. Thereby, a framework can be developed to improve Indian philosophical knowledge based value education in the high school education.