Somaiya School of Basic and Applied Sciences

Faculty of Science

Somaiya Vidyavihar University, Mumbai
Admission Manual

Ph.D. Programme- Nutraceuticals

AY 2026-27

Visit for Further Details: https://www.somaiya.edu/en/phd/
https://ssbas.somaiya.edu/en/programme/phd-in-nutraceuticals/

About Somaiya Vidyavihar University, Mumbai

On 26th August 2019, Somaiya Vidyavihar University, Mumbai became a reality !

After six decades of fostering a holistic teaching, learning experience, and establishing reputed educational institutions, Somaiya Vidyavihar University, Mumbai, has achieved a significant milestone. It has become the first self-financed private university in Mumbai under the Maharashtra Self-Financed Universities (Establishment and Regulation) Act, 2013.

We aspire to build and support a world-class institution—one that is proudly Indian and excels in education, research, and service. Somaiya Vidyavihar University, Mumbai, will be a hub for preserving, disseminating, and creating knowledge. It will have a global impact through its ideas and a universal commitment to service. Here, students and faculty can embrace the "Freedom of Possibilities," pursue their passions, and, most importantly, discover themselves.

Our History and Vision

An all-round education must integrate Indian culture, values & morality into the curriculum.

Somaiya Vidyavihar was founded on September 9, 1959, by Shri K.J. Somaiya (1902–1999), a visionary leader with sharp business acumen, a balanced perspective, and a deep commitment to social progress. His dream of shaping young minds through quality education led him to establish the Somaiya Trust in 1953, acquiring a vast expanse of land in Ghatkopar—then a sparsely populated area.

Driven by his passion for education and inclusivity, he later founded the Girivanvasi Pragati Mandal, the K.J. Somaiya Medical Trust, and the Girivanvasi Education Trust, along with several sister institutions, to provide greater access to learning and opportunity. Inspired by Swami Vivekananda's words, “We want that education by which character is formed, strength of mind is increased, the intellect expanded, and by which one can stand on one’s own feet,” he dedicated his life to fostering knowledge and empowerment.

Over the past six decades, Somaiya Vidyavihar has grown into a thriving educational ecosystem with 34 institutions across diverse fields, including Humanities & Social Sciences, Engineering, Medicine, Management, Education, Dharma Studies, Pure Sciences, and Commerce & Business Studies. Today, with a vibrant 50-acre campus, it is home to over 39,000 students and 3,000 faculty and staff, continuing its legacy of excellence in education and innovation.

With PhD programmes in various faculties, we provide an innovative platform for research aspirants to make a niche of their own to impact society and life.

2. About Somaiya School of Basic and Applied Sciences, SVU

The Somaiya School of Basic and Applied Sciences (SSBAS) is a newly established institution under the Faculty of Sciences at Somaiya Vidyavihar University, Mumbai. Initially it was a part of S.K. Somaiya College, SSBAS has grown into a center of academic and research excellence. With six departments, the school offers six undergraduate and eight postgraduate

programs, along with a Doctor of Philosophy (Ph.D.) program in six disciplines. SSBAS is equipped with state-of-the-art research laboratories, advanced instrumentation, and cutting-edge software, fostering a seamless integration of science and technology research. The school has successfully secured ₹1 crore+ in research funding from various governmental agencies, reinforcing its commitment to advancing fundamental research for societal development.

About Research Center

The Ph.D. programme in Nutraceuticals at Somaiya Vidyavihar University offers an exciting and innovative opportunity for students to delve into the rapidly evolving field of functional foods and nutraceuticals. As the global demand for nutraceuticals grows, this program is designed to provide advanced knowledge and cutting-edge research skills that will contribute to the development of products aimed at enhancing health and preventing diseases. Nutraceuticals, which combine the concepts of nutrition and pharmaceuticals, are increasingly recognized for their potential to promote wellness and manage chronic conditions. With an emphasis on both the scientific foundations and the practical applications of nutraceuticals, the Ph.D. program at Somaiya Vidyavihar University equips students with a strong understanding of biochemistry, molecular biology, pharmacology, and clinical nutrition. Students will engage in interdisciplinary research that explores the bioavailability, efficacy, and safety of natural compounds, functional foods, and dietary supplements.

Eligibility at UG/PG Degree	
i.	Master's degree (2 year or 1 year) or a professional degree declared equivalent to the Master's degree by the corresponding statutory regulatory body, with at least 55% marks in aggregate or its equivalent as per UGC regulations.
ii.	Master's degree in any branch of Sciences including any one of these subjects: Nutraceuticals, Biotechnology, Microbiology, Chemical Sciences, Biochemistry, Bioanalytical Chemistry, Nanoscience, Biochemistry, Life Science, Botany, Zoology, Food Science and Nutrition, Applied Biology, Bioinformatics, Biodiversity, Bioanalytical Chemistry, Clinical Nutrition and Dietetics.
iii.	An equivalent degree from a foreign educational Institution accredited by an Assessment and Accreditation Agency
iv.	**MUST** have qualified the **Ph.D. Entrance Examination and interview of SVU** – mandatory eligibility criteria for all candidates.
v.	**Candidates exempted** from appearing for Ph.D. Entrance Examination of SVU **MUST fill the application form** as per the schedule displayed on website. The exempted candidates **need to pay** the **application processing fee**.
vi.	A No Objection Certificate (NOC) from the employer in case of those who are working / employed for applying to Ph.D. Programme
vii.	If candidate wants to apply more than one subject then should submit separate / another application and **need to pay** the **application processing fee** per subject.

Research Areas
1. Identification, extraction, and bioavailability of bioactive compounds from natural sources. 2. Investigating the cellular and molecular pathways. 3. Safety, and therapeutic potential assessment of nutraceuticals. 4. Formulation of novel nutraceutical formulations with improved bioavailability and stability. 5. Development of functional foods

Exemption Criteria for SVU Ph.D. Entrance Examination
Candidates who hold a JRF Fellowship with CSIR/UGC/ICAR/ ICMR and DBT examinations are exempted from appearing for Ph.D. entrance examination of SVU. For further details about exemption and category of students refer PhD regulation - Link **However, the candidates who fulfil the above criteria MUST fill the application form as per the schedule displayed on the website along with necessary fees.**

Pattern and syllabus of SVU Ph.D. Entrance Examination
The Ph.D and JRF Entrance examination will be common and will be at Somaiya Vidyavihar Campus, SVU, Vidyavihar, Mumbai -77
Pattern of entrance examination will be notified separately in due course of time

Syllabus for Entrance Examination

CSIR – NET/JRF syllabus 2022 for Life Sciences

Unit 1: - Human Nutrition, Health and Interventions. Balanced diet-Food groups, Food pyramid. Macro and micronutrients in human nutrition-Carbohydrates, proteins, lipids, vitamins, minerals and water - requirements, sources, functions, metabolism and effects of deficiency and toxicity of the nutrients. Nutrients interrelationship. Inborn errors of metabolism. Phytochemicals, antioxidants, prebiotics and probiotics, functional foods and nutraceuticals. Drug and nutrient interaction. Diet & nutritional therapy in disorders of obesity, underweight, gastro-intestinal tract, kidney, liver, heart, lungs, cancer, diabetes mellitus, food allergies and intolerances. Major Public Health and Nutritional problems in India-Causes, magnitude and distribution. Assessment of Community Nutritional status by Standard methods. National Nutrition Policy, National and International organizations' programmes to combat malnutrition. Nutritional epidemiology, public health aspects of human nutrition. Objectives, Principles and Importance of Nutrition education, Nutrition monitoring and Surveillance.

Unit 2: - Food Science and Processing Technologies Need & Scope of Food Science, Physio-chemical properties of foods, Methods of cooking-merits & demerits, factors affecting cooking. Sensory evaluation and Consumer acceptability, Food fortification, enrichment and supplementation. Food additives and Preservatives. Anti-nutritional factors & Toxicants in foods. Food hygiene and sanitation, Food-borne illnesses, infections and food poisoning. Food Adulteration, Food Standards, Laws & Regulations for food safety. Post-harvest losses, food spoilage and its causes. Food Processing techniques, effects on nutritional value, food packaging and labelling. Quantitative and Qualitative changes during post-harvest handling and processing of foods. Principles and methods of food processing, drying, concentration, freezing, cryogenic freezing fermentation, irradiation, canning, sterilization, pasteurization. Processing & packaging techniques for cereals, millets and legumes, milk and milk products, fruits and vegetables, nuts and oilseeds, meat, fish and poultry. Role of warehousing corporation and Food Corporation of India on post-harvest conservation. Storage of perishable and non-perishable foods, traditional and modern food storage.

Unit 3: - Introduction to Nutraceuticals: Free radicals and antioxidants: The free radical or oxidant theory of disease, Mechanisms for limiting free radical damage, Diets associated with reduced risk of chronic diseases, Evidence for benefit of antioxidant supplements, Vitamin E and dementia. Secondary plant metabolites, Terpenoids, Phenolic compounds (phenols and polyphenols), Nitrogen-containing alkaloids and Sulphur containing compounds, Lipids and lipid related functional foods. Mechanism of action of secondary metabolites in reducing risk of chronic diseases, Plant and animal extracts: Agnus castus, Aloe vera, Bee products, Chitosan, Echinacea, Garlic, Ginger, Ginkgo biloba, Ginseng, Guarana. Kelp, Milk thistle, Saw palmetto, Spirulina, Chlorella, St John's Wort, Tea extracts. Nature, functions, supplement forms and sources, rationale for use and evidence of effectiveness of Glucosamine and chondroitin sulphate, S-adenosylmethionine, Lecithin and choline, L-carnitine, Creatine Coenzyme Q10

(ubiquinone), α-Lipoic acid, Methylsulphonylmethane.

Unit 4: - Techniques of cellular fractionation, Extraction procedures, Batch extraction, continuous extraction and counter current extraction. Centrifuge techniques: zonal, density, gradient and ultracentrifugation techniques and their applications. Electrophoresis: zonal, paper, gel electrophoresis and isoelectric focusing and their application. Thermal method of analysis. Chromatography: Paper, TLC, adsorption, ion exchange, gel filtration, affinity, GC & HPLC. Spectroscopy: Beer-Lambert law & brief description of colorimetry, UV VIS, Fluorescence, Infrared spectroscopy, Raman Spectroscopy, NMR, Mass spectroscopy, Flame photometry, atomic absorption spectroscopy and X-ray diffraction, ICP MS, ICP AES, General idea about hyphenated techniques in chromatography.

Unit 5: - Fermentation Technology: Media for microbial fermentation, Scale up of a microbial process, Bioreactor designs and types of bioreactors, Products of microbial fermentation: Primary and secondary metabolites, Product recovery and downstream processing: Separation techniques, Tangential flow filtration, micro and nano-filtration techniques, reverse osmosis, Various heating processes and heat transfer mechanisms. Mass transfer operations: drying, evaporation, concentration, particle size reduction, micronization, solvent extraction, centrifugation, and crystallization.

Unit 6: - Sensory evaluation: Basics of organoleptic responses, Attributes of food Taste, aroma, appearance, flavor, texture, noise Senses required for sensory evaluation Sensory evaluation panels- Choosing & training panel consumer & trained panels. Types of sensory evaluation tests- Discriminative test -Triangle test, duo trio test, paired comparison test overview of descriptive test, ranking, scoring, hedonic tests. Sensory analysis vocabulary- General terminology, terminologies related to senses, organoleptic attribute. General outline of sensory lab- Testing area, Testing setup, Lighting testing schedule, preparation of sample, order of presentation, Role of sensory evaluation as an aid to product development.

Unit 7: - Food additives: Broad classes of food additives and their application, Preservatives, Antioxidants, Sequestrants, Surface active agents, Stabilizers, Thickeners, raising agents Bleaching and Maturing agents, sweeteners, fat replacers, acid regulators Food color and flavor: Natural and synthetic, types, properties, Applications, regulatory aspects and safety issues.

Unit 8: - Packaging for Nutraceutical Products: Introduction to Packaging: Uniqueness of Nutraceutical Packaging, Packaging Forms & their Significance, Packaging Materials (covering basic manufacturing process, applications and significance) Paper, Paperboard and CFB Glass, Metals, Basic Polymer based materials, Polymer based composite materials, Ancillary Mats, Package Material Testing. Packaging Techniques: Canning, Vacuum packaging, Modified Atmospheric packaging, Controlled Atmospheric packaging, Aseptic packaging, Passive & Active packaging, Smart & intelligent Packaging. Compatibility & Migration Studies, Accelerated Shelf-Life Testing Packaging of Nutraceuticals and Pharmaceuticals, Packaging Validation. Packaging Laws and regulatory compliance new developments in Packaging.

Process of getting the documents submitted return
After verifications of documents, within 7 days, documents will be returned back to students.

Important Links
Tentative Timeline / Steps adapted for Ph.D. Programme - **Link**
Fee Structure of Ph.D. Programme - **Link**
Guidelines for Payment of Fees a Refund – **Link**
About course work - **Link**

Contact

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