DOCTORAL PROGRAM IN
PHARMACEUTICAL SCIENCES (Ph.D)
Whether you want to broaden your mind, advance your career, increase your knowledge, travel the globe or change the world, Chitkara University can provide you with the opportunity and real-life skills to do it.

Chitkara University which has been founded by highly accomplished and passionate academicians is emerging as one of the leading non-profit private universities in the country.

Chitkara University has established an unassailable reputation for strong on-campus recruitments on the sheer virtue of our intensive focus on making all our graduates "industry ready".

Chitkara University is different. Our students are different. So are our faculty, our academic strengths, research pedigree and our outlook on teaching and learning.

Students from around the country are attracted to Chitkara University because all our academic programs are designed with keeping YOU in mind.

So go ahead. Sign on the dotted line for your future success.
EXPLORE YOUR POTENTIAL

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STRONG ACADEMIC HERITAGE

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100% CAMPUS RECRUITMENT

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INNOVATION

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AN INSPIRATIONAL STUDENT EXPERIENCE AT A LEADING NON-PROFIT PRIVATE UNIVERSITY OF INDIA
WHO ARE WE?

Chitkara University has been founded by Dr. Ashok Chitkara and Dr. Madhu Chitkara who have been passionate teachers for more than 40 years now.

Since the inception of the University, Chitkara University has been different. Our students have been different. So are our faculty, our academic strengths and our outlook on teaching and learning.

The unique difference being that Chitkara University has been established by and managed by passionate academicians with the sole mission of making each and every student "Industry ready".

This difference has been acknowledged by students, parents, alumni, Government and Industry since the inception of the University. Within a decade, most of our academic programs are ranked among the top 50 programs in the country which speaks volumes about our strong academic heritage, highly committed faculty, extensive Industry collaborations, great international connections and state of the art campus facilities.

JOIN CHITKARA UNIVERSITY TO EXPLORE YOUR POTENTIAL !!
Selecting a university program marks the start of an exciting period of your life. When you are selecting a program at an institution, you add life-changing experiences and expanded opportunities as well.

Students from around the country are attracted to Chitkara University because of our commitment to teaching excellence, because we conduct research that makes a difference, because of our industry partnerships and because of our tailored courses.

We look forward to welcoming you to Chitkara University.
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Dr. MADHU CHITKARA
PRO CHANCELLOR
CHITKARA UNIVERSITY

Chitkara Education brings with it a reputation that has been earned through years of serving the career-needs of the student community. It is a reputation for excellence and innovation among coveted employers for preparing graduates who have the knowledge and skills they need for success in their workplace.

There are many reasons to choose Chitkara University. Our graduates go on to great careers, we’re hands-on and responsive in our teaching, we provide a great environment to study and our research is world-class.

The learning environment at CHITKARA UNIVERSITY represents a unique blend of distinguished faculty, brilliant and intellectual students with a proactive collaboration with industry.
CHITKARA UNIVERSITY IN PUNJAB

Chitkara Educational Trust established its Punjab campus in the year 2002 on the Chandigarh-Patiala national highway which is 30kms from Chandigarh. In the year 2010, Chitkara University was established by the Punjab State Legislature under “The Chitkara University Act”. Chitkara University is a government recognized University with the right to confer degrees as per the sections 2(1f) and 22(1f) of the UGC Act. 1956. Chitkara University Punjab is a multi-discipline student centric campus with more than 6000 students and 1000 faculty members.
CONSTITUENT INSTITUTIONS OF CHITKARA UNIVERSITY (PUNJAB) ARE:

CHITKARA INSTITUTE OF ENGINEERING AND TECHNOLOGY
- 4-Year Bachelor of Engineering (B.E.) in
  - Computer Science & Engineering
  - Electronics & Communication Engineering
  - Mechanical Engineering
- 2-Year M.E. Program in
  - Computer Science & Engineering
- 2-Year MCA (Lateral Entry)
- 3-Year BCA
- 5-Year Integrated BCA-MCA

CHITKARA SCHOOL OF PLANNING & ARCHITECTURE
- 5-Year B. Arch.

CHITKARA BUSINESS SCHOOL
- 2-Year Management Program (MBA) in
  - Marketing
  - Banking & Finance
  - Financial Market Practices in collaboration with BSE Institute
  - Healthcare Management in collaboration with Fortis Healthcare
  - Human Resource in collaboration with ManpowerGroup
  - Logistics & Supply Chain Management in collaboration with Safeducate
- 3-Year B. Com (Hons.)
- 3-Year BBA

CHITKARA COLLEGE OF HOTEL MANAGEMENT & CATERING
- 3-Year B. Sc. (HMCT)

CHITKARA COLLEGE OF PHARMACY
- 6-Year Pharm. D.
- 4-Year B. Pharm.
- 2-Year M. Pharm. (Pharmaceutics/ Pharmacology/ Clinical Research & Clinical Pharmacology)

CHITKARA SCHOOL OF MASS COMMUNICATION
- 3-Year BA in Journalism & Mass Communication
- 2-Year MA in Journalism & Mass Communication

CHITKARA COLLEGE OF SALES & RETAIL MARKETING
- 2-Year MBA (Sales & Retail Marketing)

CHITKARA SCHOOL OF HEALTH SCIENCES
- 4-Year B. Sc. Nursing
- 3-Year B. Sc. (Allied Healthcare)
- 4-Year B. Optometry
- 2-Year M. Optometry

CHITKARA COLLEGE OF EDUCATION
- B. Ed.
Chitkara University’s reputation for innovative teaching, strong industry links and highly employable graduates continues to set us apart from other Indian Universities.

**SMALL WORLD**

Whether you are a Bachelor’s student, Master’s student or taking part in one of our exchange programs, we make sure you feel right at home with us.

Chitkara University provides a specially safe and serene setting for studies. Students get to enjoy the changing seasons and are able to grow in various ways.

At Chitkara University, Education is not only “State-of-the-art” but truly “State-of-the-heart”. Everything we do shares the same mindset and determination.

We feel passionately about what we do and we hope you will become part of our family.

**CLEARED FOR LAUNCH**

Any decent road map to success requires that you know where you are going – and also where you have been. The third element is momentum.

In accordance with Chitkara strategy, we allocate more and more resources to excellence in teaching and learning. The entire approach at Chitkara University is learning-centric, enhancing knowledge, skills and understanding through practical experience.

Today, we have impressive world-wide collaboration agreements with top International Universities and research institutions which is helping us train Chitkara students for the new global economy.

We strongly believe that we are creating the right kind of future for the professionals of tomorrow who we are educating today. Our Education is always supported by the exceptional research that we conduct. This is a solid platform for your potential, for your ambition and for your career.
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INDUSTRY-LED COURSES

Chitkara University offers a learning experience that improves your employment prospects. We maintain close links with leading blue-chip companies and professional associations to deliver most of our academic programs. Through these alliances we stay in touch with industry, ensuring that our courses are relevant, practical and deliver the skills in demand allowing our graduates to hit the ground running.

Strong corporate relationships also have a direct influence on our degree programs and have resulted in our “industry facing” curricula. This ensures that our education is up to date and valued by the future employers of our alumni. Chitkara University’s board also has a strong representation of top level executives from top corporations across the world.

GREAT CAMPUS RECRUITMENT

Chitkara University has established an unassailable reputation for very strong campus recruitment on the sheer virtue of our intensive focus on making all our graduates “industry ready”.

START ME UP

Innovation and entrepreneurial thinking are highly valued at Chitkara University. The possibility to combine business and technology in their studies gives our students unique opportunities to build their future careers, be it through top-class companies or capitalizing on their own innovations in order to create new businesses.

Think of it as your very own, personal Launch pad.
THE CITY BEAUTIFUL

CHANDIGARH

A million people; infinite possibilities

Located in the foothills of the Shivalik mountain ranges, Chandigarh is India's best planned city, with world renowned architecture and an unparalleled quality of life. The face of modern India, Chandigarh, is the manifestation of a dream that Pt. Jawahar Lal Nehru envisaged and Le Corbusier executed.

Chandigarh was the first planned city in India post independence in 1947 and is known internationally for its architecture and urban design. The city has projects designed by architects such as Le Corbusier, Pierre Jeanneret, Jane Drew and Maxwell Fry. It is an urban showpiece - where plants and trees are as much a part of construction plans as the roads and buildings.

Chandigarh and its surrounding areas, namely Mohali and Panchkula are on their way to become the north Indian hubs for IT industry with major presence of companies such as Infosys Technologies, Dell, Tech Mahindra, Quark and Wipro. Chandigarh is also home to several regional offices for major multinational banks, retail establishments and real estate corporations.

With its world class infrastructure and highest per capita income Chandigarh is fast emerging as the entrepreneurship hub of the country. Chandigarh is also attracting the service industry, education, health, food processing and a host of other companies who view it as their regional center for all north Indian states namely Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Punjab and Haryana.

Chandigarh is a city that comes under 'Times' 15 best Asian spots. 'Times' magazine has dubbed Chandigarh as "the thinking man's city" amidst a continent of mindless growth.

In major surveys, Chandigarh beats Bangalore, Chennai & Hyderabad in the overall ranking of India's best cities for doing business.

A confederation of Indian Industries (CII) commissioned study has ranked Chandigarh as the overall third best city for doing business among 35 cities with an urban population exceeding population of one million.

With easy connectivity to major cities across India by flight as well as rail Chandigarh serves as the gateway to northern India. There are also direct flights to connect with the rest of the country mainly Mumbai, Delhi and Bangalore. Indian rail network connects this city to various Indian cities chiefly Delhi, Shimla, Lucknow, Jaipur, Mumbai, Goa and Kerala.
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Our degree programs prepare students for the real world and offer the opportunity for practical, hands-on experience, internships and projects. Take advantage of this experience to gain the practical skills employers are looking for and open your mind to career opportunities. Academics at Chitkara University keep pace with workplace demands and ensures that students are 'work ready' and in touch with what's expected in a professional environment.

Academic Excellence

Our academic programs enjoy a great reputation in the industry. To maintain our leadership position, we focus on inducting the best faculty from across the industry and academia. Our faculty is known for its strong academic orientation contributing to the creation of knowledge in a dynamic, ever changing environment. Classes are built around experiential learning where students are pushed to their limits to take conceptual framework and apply them. Teaching methods include lectures and tutorials that emphasize a learning-centric approach and application of knowledge. Faculty brings their broad based experience into the classroom to enrich the learning process and to ensure that coursework reflects current industry practices.

Problem Based Learning (PBL)

Some of our courses are being taught using the PBL approach where students apply their knowledge to solve problems they may encounter in a professional context and in doing so, extend their experience beyond their text books. Elements of the work situation are brought into the classroom by the PBL approach. Students undertake a series of tasks that bring industry problems into the academic environment.

HANDS-ON TEACHING

WE ARE HANDS-ON & RESPONSIVE IN THE WAY WE TEACH
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**Guest Lectures**
Guest lectures are regularly organised by eminent industry experts, entrepreneurs and HR managers from large and medium sized companies to give information to students on latest trends and happenings.

**Applied & Project Based Learning**
Applied learning is a hallmark of all teaching at Chitkara University. We believe that the best way to learn is by "doing" and that’s why we emphasize a hands-on approach. We lay stress on project based learning. Thus, the need for independent thinking and creativity is encouraged among students resulting in interesting and novel projects. Further, a significant increase in the open category credits enables students to have a broad base and pursue interests and adopt a multi-disciplinary approach.

**Specialisation Options**
In every program, further specialisation and electives are offered in the last year of the study. To help a student in this task, various tracks have been identified through our curriculum geared towards a variety of specialisations. Our goal is to prepare students for a satisfying career in Engineering. Following a particular curricular track will equip a student with the skills needed for progressing further in the chosen career.

**Faculty**
Chitkara University boasts of strong faculty with Masters and Doctorate degrees in different specialisations with appropriate academic and research blend of mind. The entire faculty has been drawn from leading academic institutions and corporations from across the country with years of teaching and research experience. Our faculty enjoys a good reputation and strong relations with leading industrial houses in terms of consultancy and research work. Our faculty not only focuses on conceptual understanding of various academic concepts but also gives first hand experience to all students through role plays, experiential exercises, industrial visits and classroom lectures.
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Lectures, demos, assignments, seminars, tutorials, laboratory assignments, internships and corporate visits are an integral part of Chitkara Education. Our study methods are continuously developed and new creative ones introduced. Small student groups allow teachers and professors to get to know every student on an individual level.

Your academic studies will be challenging. We offer the highest quality academic experience and expect you to excel. You will be an active part of a leading academic community where originality, independent thought and enquiry are not only encouraged but expected. You will be studying and working alongside academics who are experts in their fields. Our outstanding and responsive support services will be actively available to you right from the start of your transition to University life, until the end of your degree.

You will be encouraged to become an independent and self motivated learner. This means you will be able to spend your time outside of lectures reading around your chosen subject, formulating your own ideas. This will encourage you to develop an enquiry-based approach to learning, enabling you to challenge ideas and put forward your own opinion.

This approach may be very different to the way you have studied in the past. With the support of your lecturers and tutors, you will learn to adapt to this participative approach and reap the rewards it brings you. Our enquirey-based approach enables you to take control of your own learning, encouraging you to develop the skills that employers are looking for.
INSPIRING AND HIGH QUALITY EDUCATION

TEACHING METHODS

We have a range of teaching methods, designed so that you can get the most from your studies such as:

Lectures
You will listen to experts sharing their knowledge and discoveries in challenging and encouraging ways. Academics will introduce you to key facts and ideas in your subject. There may be mini activities and pair work to complete later. You may like to take written notes, but most lectures are now recorded, so you can access the information afterwards on the Virtual Learning Environment.

Seminars
In small groups led by academics you will be encouraged to present and discuss your ideas and debate interpretations and opinions with other students.

Tutorials
You will have the opportunity to discuss your work and assignments with your tutor, usually in small groups.

Laboratory-Based work
You will have a chance to get practical experience and apply the knowledge you have developed in your lectures to a laboratory setting. Through these sessions you will learn to expertly analyze real life problems that will equip you with the practical and analytical skills so valued by employers.

Workshops
You will engage in problem solving sessions facilitated by a member of academic staff; these sessions usually involve students working in groups.

Self Study
You will be expected to read around the subject matter of your lectures. Lectures will stimulate your curiosity to find out more through your own independent study and teamwork with fellow students, both before and after the lecture itself.

Peer Group Learning
You will be asked by your tutor to direct a lesson or prepare a presentation with your fellow classmates. By interacting with the lesson material, you will remember the content more effectively.

CUTTING EDGE EQUIPMENT AND UP-TO-DATE LABORATORIES

Ample, up-to-date computer resources and the newest technology are available to students. Laboratories are equipped with tools used by the industry and businesses making our education future-proof.
RESEARCH OPPORTUNITIES

Research at Chitkara University is growing steadily but strongly. Led by successful strategies to develop a vibrant research culture which aligns with and informs our learning and teaching activities. Our goal is to improve Chitkara’s research performance by building a critical mass of researchers who will develop a distinctive portfolio of high quality discovery, applied and commercial research.

The University’s approach to its research is differentiated, targeted and welcoming of quality collaborative partners. Our strategies include: concentrating research in areas of strength and excellence; engaging widely with local, national and international institutions, industry and community partners, and all levels of government; establishing and partnering in research centres; appointing researchers who are leaders in their fields; and commercialising applied outcomes.

Both the faculty and doctoral scholars actively involve themselves in research projects. Interdisciplinary research, a system level approach and close ties to industry combine to yield up-to-date research. Strong ties with industry complement these top-notch research opportunities. Through research centre-industry liaison programs and departmental advisory boards, faculty and students are working towards future technologies. Lot of our research initiatives are under the funding consideration from DST and other related agencies.

The students and faculty take part in national/international conferences as well as workshops and seminars in their areas of interest. Faculty are constantly involved in research publications and quality improvements programs. This approach helps the faculty in taking the student imagination beyond classroom teaching to actual scientific exploration.

Chitkara University is one of the two institutions in India that received the prestigious HP Innovation Grant of USD 1,70,000 and one among five selected from Asia Pacific including Japan for creating technology which is accessible to everyone as a way to learn, work and benefit from information.
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RESEARCH OPPORTUNITIES

VIBRANT RESEARCH CULTURE
Blue Chip multinational and national Pharma companies including Ranbaxy Labs Ltd, Cipla, Pfizer Ltd and Eli Lilly have been the leading campus recruiters for our Pharma graduates since the year 2009. With a good placement record for the batches passing out since 2009, and many students opting for higher qualifications (M Pharm/MBA either in India or abroad), it is clear that the Pharma program has managed to carve “a niche of its own”. We have established an unassailable reputation for providing on-campus recruitment opportunities in diverse areas in the Pharma field including production, QA, Marketing/Retail and Hospital Pharmacy & our sheer virtue of intensive focus on making all our graduates “industry ready”. A career in pharmacy, unfolds a vista full of opportunities leading to a golden future for a young career aspirant such as.

Research & Development

Mainly M. Pharms & PhDs are in great demand in the various areas of Pharmaceutical R&D. Areas where professionals are required are:

- New Drug Discovery Research (NDDR)
- Discovering a new drug has assumed prime importance in the post-GATT era where a pharmaceutical company has to ensure that it is selling original research products.
- Process Development (P&D)
- One of the important areas in bulk drugs industry is developing viable processes for the manufacture of drugs and intermediates for their commercial production.
- Formulation & Development (F&D)
- The success of any pharma company lies in the quality of its products, i.e., its formulations & dosage forms and constant research is required to develop new products that are more patient compliant. Formulation development ensures this.
- Clinical Trials, Bioequivalence studies, Toxicological Studies
- These are some of the areas of clinical research which are in high demand as they are involved in the systematic evaluation of potential drug substances prior to getting them approved by the authorities.
CAREER OPTIONS

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Production & Manufacturing
A pharmacy professional can work as a production person, involved in the production of bulk drug and intermediates or formulations and dosage forms. Industries in the cosmetics, soaps, toiletries segment, dental products, blood and plasma products also hire pharmacy professionals.

Analysis & Testing
Quality control (QC) and Quality Assurance (QA) are the most integral areas of the drug and pharmaceutical industry. Highly specialized and trained staff is required to handle sensitive analytical procedures & sophisticated equipment.

Marketing
The Pharma Sales & Marketing is a highly technical field & offers excellent opportunities for the pharmacy graduates. The pharmacy graduates are absorbed as product executive or managers and can progress through group product manager and brand manager positions and rise to national level manager status.

Hospital Pharmacy
Another opening for a Pharmacy professional is "Registered Pharmacist" in the hospitals or drug stores. This is a very sought after profession especially in countries like the U.S.A., Canada, middle east and European countries. The trend is already set in many hospitals in the country. This is a key position and the Pharmacist plays an important role from preparing prescription to the patient’s medical history after the medical doctor has diagnosed the disease.

Academics
Excellent opportunities for the professionals are available in teaching profession also. Besides teaching Academic related opportunities involve positions on Research Posts and Training programs, Documentation, Library Information Services & Pharma Journalism. The regulatory affairs as well as, patenting processes and Issues involve a lot of documentation work to be done and submitted to the concerned regulatory authorities, in a highly specialized and technical manner.
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Excellent opportunities for the professionals are available in teaching profession also. Besides teaching Academic related opportunities involve positions on Research Posts and Training programs, Documentation, Library Information Services & Pharma Journalism. The regulatory affairs as well as, patenting processes and Issues involve a lot of documentation work to be done and submitted to the concerned regulatory authorities, in a highly specialized and technical manner.

CHITKARA COLLEGE OF PHARMACY

Established in the year 2005, Chitkara College of Pharmacy (CCP) is approved by All India Council of Technical Education (AICTE) and Pharmacy Council of India and is offering full time Bachelor of Pharmacy [B.Pharm] & Master of Pharmacy [M.Pharm] programs.

Chitkara College of Pharmacy has been designed to be the centre of excellence for Pharmaceutical Sciences in North India. The profession of pharmacy has transformed into a hub for the “Global Healthcare” and evolved as a multidisciplinary, multifaceted curriculum. Its involvement is deep as it has an important role in all events: from discovery of new drug molecule to its evaluation, development, approval for human consumption, manufacture and every other important aspect.

Our academic system has been framed taking into consideration the responsibility of students to meet the demands of hi-tech pharmaceutical industry, at the same time ensuring that they confidently serve the requirements of patient care and pharmacy practice.

Since its inception, we have made conscious efforts to inculcate research aptitude in its students at all levels to keep them abreast of the requirements of the industry. The efforts are visible in the sizeable number of publications at both national and international level. Through the years, the Institute has been able to establish strong bonds with the industry at local as well as national levels for training and placement activities.
All our full time Master’s & Bachelor’s programs in Pharmacy comprise of the following core areas of study and additional support courses as under:

**Pharmaceutical Chemistry and Analysis:** These are related scientific discipline at the intersection of chemistry and pharmacy dealing with designing and developing pharmaceutical drugs and also with analytical topics that help develop basics about quality management of raw materials and finished pharmaceuticals.

**Pharmaceutics:** It’s the discipline of pharmacy which deals with all facets of the process of turning a new chemical entity into a medication able to be safely and effectively used by patients in the community. Apart from techniques to manufacture orthodox tablet, liquids and injectable formulations, the subject has evolved so much over the years that many Novel drug delivery Systems including dermal and mucosal patches, targeted delivery systems, antibody based delivery systems and other prolonged release minimal dosage formulations have become extremely common.

**Pharmacology:** It’s the study of how chemical substances interact with living systems. The field encompasses study of drug composition, drug properties, interactions, toxicology, & desirable effects that can be used in therapy of diseases. Other subjects, viz., Anatomy and Physiology and Pathophysiology are a prelude to pharmacology helping the students to develop the knowledge of intricate functioning and make up of human body and disease processes. Clinical Pharmacology details effective use of medicines in human body and management of various disease conditions.

**Pharmacognosy:** It’s the study of medicinal products in their crude, or unprepared form as directly obtained from plants, animals and other natural sources. It includes the study of the physical, chemical, biochemical and biological properties of drugs, drug substances as well as the search for new drugs from natural sources which includes separation and identification of phytoconstituents from plants, conversion into semisynthetic derivatives and standardisation of multicomponent herbal formulations.

Additional elective integrated projects are a part of the curriculum to help students understand using knowledge from different subjects to carry out pharmaceutical research.
ACADEMIC FACILITIES

High-tech well equipped labs in the departments of Pharmaceutical Chemistry, Pharmaceutics, Pharmacology and Pharmacognosy serve as a strong framework for our graduates to help them develop capabilities to become world class pharmacists and scientists. Important in-house projects and research work is taken up in the labs that is academically as well as socially productive. The classroom and laboratory infrastructure is backed and supported with well furnished Seminar Halls and Conference rooms where presentations on Scientific and other topics are organized by faculty members and students.

The institute has sophisticated manufacturing and analytical equipments including:

- High Performance liquid Chromatography (HPLC) machine
- FTIR Spectrophotometer
- USP Dissolution apparatus
- Multistation tablet Punching Machine
- Fluidised bed Drier
- R M granulators
- Lyophiliser
- Laminar flow Bench
- Refrigerated centrifuge
- Ultrasonicator
- Microscope with camera

Pharmacology equipments include pole climbing apparatus, actophotomete, electroconvulsiometer, water maze, chymographs, tail flick apparatus, Histamine Chambers etc. All labs are well furnished with appropriate number of glassware, chemicals and additional preparation & technical staff support rooms.

Chitkara College of Pharmacy – Analytical Testing Services

Chitkara College of Pharmacy provides following facilities for research in pharmaceutical sciences:

- Analysis of Samples for Infrared and UV Spectrophotometric Data.
- HPLC Analysis.
- Dissolution and Other Formulation Studies.
- Analytical Method Development.
- Pre-clinical Evaluation.
DOCTORAL PROGRAM IN
PHARMACEUTICAL SCIENCES

A Ph.D degree, which is the Doctor of Philosophy degree, is the greatest academic qualification to be accomplished by any student. To earn a Ph.D., one must accomplish two things. First, one must master a specific subject completely. Second, one must extend the body of knowledge about that subject. Because earning a Ph.D. requires extended study and intense intellectual effort, less than one percent of the population attains the degree. Society shows respect for a person who holds a Ph.D. by addressing them with the title “Doctor”.

Chitkara University’s Doctor of Pharmacy degree builds on the foundation of a master’s degree to prepare students for senior level leadership, consulting, and teaching positions within business, government, non-profit organizations, and higher education.

Our doctoral students are educated to discover new solutions to unsolved problems in a range of fields. Students develop analytic and research skills to define problems, study advanced content knowledge to discover innovative solutions, and practice consulting and leadership techniques to facilitate innovative change in organizations, communities, and society. Using these skills, graduates may find opportunities as leaders within nonprofit organizations and businesses, as consultants, or as faculty within higher education.

Chitkara University’s Doctor of Philosophy (Pharmaceutical Sciences) degree program has been designed to help the scholar gain an in-depth understanding of a specialized subject related to Pharmaceutical Sciences so that he/she can predict trends and, ultimately, make contributions in his/her area of expertise.
Ph.D. Tracks (Pharma Sciences)
There are four available tracks.

I. Pharmaceutics
II. A. Pharmacology and Toxicology and B. Clinical and Experimental Therapeutics
III. Pharmacognosy and Natural Products
IV. Medicinal Chemistry

I. Pharmaceutics
  The Ph D in Pharmaceutics offers study prospects in any one of the following areas:
  Physical Pharmacy is the study of the physical and chemical properties of drugs and their dosage forms. Biopharmaceutics and Pharmacokinetics involves investigation of the factors that influence the absorption, distribution, excretion, and metabolism of drugs, and the mathematical description of these processes. Drug Delivery, Pharmaceutical Processing and Material Science focuses on the novel applications of pharmaceutical excipients to target drugs to specific sites in the body; to solve problems related to solubility, stability, dissolution rate and bioavailability; and to utilize advanced processing technologies to design innovative drug delivery systems.

II. A. Pharmacology and Toxicology B. Clinical and Experimental Therapeutics
  The Ph D in Molecular Pharmacology and Toxicology emphasizes research in molecular and neuropharmacology, receptor pharmacology and biochemical and oxidant toxicology. The PhD program in Clinical and Experimental Therapeutics is a novel interdisciplinary program of study that educates students with the perspective and skill set to identify important connections between fundamental biomedical research and human disease. The program’s emphasis is on translational, rather than basic science research.

III. Pharmacognosy and Natural Products
  The Ph D in Pharmacognosy and natural products is focused on extraction, isolation and characterisation of phytopharmaceuticals from the plants and development of natural products.

IV. Medicinal Chemistry
  The Ph D in Pharmaceutical Chemistry involves synthetic drug research, Quantitative structure activity relationship studies and analytical method development.
Program Overview

Program Mission
The Mission of our Doctoral Program is to enable successful Pharmaceutical Science professionals to pursue their academic career by enhancing research capabilities and utilizing theoretical knowledge. There is no other mean than research to meet the needs of modern everyday evolving technology world.

Educational Objectives
The educational objectives of our Doctoral Program in Electronics are to enable students to:

- Apply theoretical and analytical competency in own working and functional area.
- Exhibit analytical and research skills necessary to create knowledge and apply it to emerging technological issues
- Demonstrate expertise in specific topic through the design, execution and completion of doctoral dissertation that contributes to the knowledge and practice of the field.

OUR PEDAGOGY:
Doctoral Program in Pharmaceutical Sciences
Combining Research and Reality

This Ph.D. [Pharma Sciences] uniquely fulfills the educational needs of active core Pharmaceutical Sciences professionals

- Balancing breadth and depth: The program includes four core courses to prepare for research, contemporary issues in emerging concepts in Synthetic and natural Drug Discovery and derivatisation, preformulation and formulation studies, preclinical and clinical evaluations, Nano Technology and development of methodologies.
- Integrating research and problem solving: Through specialization research courses, this program enhances your skills to undertake research in all the mentioned domains and attend to a specific area in new drug discovery and development process.
- Merging theory and practice: The doctoral program emphasizes established and emerging theory that has proven potential for identifying, structuring, and solving issues in pharmaceutical research. You collaborate with seasoned professionals and accomplished faculty to advance knowledge in drug discovery and development.
- Blending classroom and online learning: By incorporating the advantages of both co-located contemporary instruction and asynchronous distributed learning this program delivers effective and efficient doctoral education. Seminars continue your learning beyond the classroom. Core courses will however be delivered in the University Campus.

The educational climate of this doctoral program enriches your learning by forming and energizing groups of candidates who complete most of their courses together. The group broadens your perspectives by leveraging the diverse experiences of subject experts from many industries, firms, and functions, stimulates your intellectual curiosity and critical thinking to attack complex problems, and challenges you continuously through online discussions between monthly class sessions and motivates you to progress by providing an emotional and social support group.
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Program Overview

Structure

The Doctor of Philosophy in Pharmaceutical Sciences curriculum includes three core courses of study namely, Seminar on Research Methodology, Doctoral Foundation Seminar in Pharmaceutical Sciences and Seminar on Doctoral Concentration including specialization and four courses equivalent on thesis progress. Core courses are completed during the first year, through in campus delivery.

Progress Review Seminar

The seminars track progress of Ph.D. (Pharma Sciences) Study. These are to be held once every six months after approval of synopsis. Three such seminars are held by the University with intensive mentoring by Doctoral Research Committee.

Publishing Research Work

The candidates are expected to write at least two well-researched articles and publish it in international (at least one) / national refereed journal before the completion of their study. This will provide you an opportunity to conduct in-depth research in the chosen subject.

Seminar on Doctoral Concentration

Each doctoral candidate will complete a comprehensive seminar which will have two modules:

- Core specialization of the candidate.
- Doctoral program concentration in Pharmaceutical Sciences

The areas of interest in Pharmaceutical Sciences are given below. These areas of research in the domain are indicative but not limited to the following:

- Drug Design
- QSAR
- Preformulation Studies
- Formulation Development Studies
- Phytochemical Screening
- Phytopharmaceutical Development
- Pharmacodynamic studies
- Receptor binding studies
- Molecular Pharmacology
- Clinical trials
- Pharmacovigilance studies
FRAMEWORK FOR Ph.D PROGRAM

Deliverable – 1 | Submission of Application form
Please download and fill out the application form

Deliverable – 2 | Acceptance by Chitkara University
After acceptance of the form, the admission process will be as follows

- Written test
- Personal Interview
The syllabus of written test will be communicated to you on e-mail.

Deliverable – 3 | Selection for Doctoral program
Once you are declared short-listed, after qualifying in written test and personal interview round, as per the merit for the Ph.D program at Chitkara University, you would need to proceed towards registration and commencement of your course work.

Deliverable – 4 | Course work requirement
Every candidate should complete four courses before working on Doctoral Dissertation. Every course will be held twice in a year and will be scheduled on the weekends. Course work dates for the year will be announced ahead of schedule so that you can plan your break from your workplace. Each course will normally be for four days duration including the weekends.

Details of Courses

- **Deliverable 4(a) | Doctoral Seminar on Research Methodology.**
  On completion of this course work, the candidate will be able to:
  - Understand nature and functions of research.
  - Understand basics of research methodology to include problem formation, hypothesis/ questions forming, research design, sampling techniques, data collection and analyze.
  - Understand basic APA formatting style to be used for the thesis.
  - Understand structure of journal article.
  - Knowledge about ethical practices in research.

- **Deliverable 4(b) | Doctoral Seminar on Advanced Research Methodology.**
  On completion of the course work, the candidate will be able to:
  - Understand theory formulation.
  - Learn concepts of research design.
  - Understand fundamentals of data analysis.
  - Carry out factor analysis, analysis of variance, multiple regression, modeling, cluster and discriminant analysis.
  - Use of excel and SPSS for data analysis

- **Deliverable 4(c) | Ph.D foundation course in Pharmaceutical Sciences**

- **Deliverable 4(d) | Ph.D concentration courses (Domain specific)**
  **Elective:** Advances in Pharmaceutical sciences and research (Medicinal Chemistry/ Drug Design/ Formulation development/ Phytochemical screening and phytopharmaceuticals/ molecular pharmacology, pharmacodynamics and clinical therapeutics)
Deliverable – 5 | Finalization of synopsis and approval
This will commence immediately after a candidate successfully completes the course work (i.e. Deliverable 4). A suitable guide is allotted in case a candidate is not able to find a guide in the chosen area.

The following process will be followed:
- Extensive review of literature under guidance of the thesis guide.
- Selection of a topic and alternatives.
- Preparation of synopsis.
- Presentation of outline synopsis to Doctoral Review committee (DRC).
- Approval of synopsis and commencement of research.

Deliverable – 6 | Progress Review Seminars
A minimum of three such seminars will be held in the University campus. The candidate will approach the guide for a suitable schedule. Objective of these seminars is to track progress on the research. One such seminar must be held every six months after the approval of synopsis.

Deliverable - 7 | Publishing Research papers
Each doctoral candidate is expected to publish a minimum of two research article in domain specific journals during the entire research period. Progress seminars can be useful to prepare such articles.

Deliverable - 8
- **Deliverable 8(a) | Final Thesis Submission.**
  Each candidate will submit three copies of thesis for examiners evaluation. These will be accompanied by abstract and summary of the thesis as per detailed guide lines.

- **Deliverable 8(b) | Defense of Thesis.**
  In case the thesis is found to meet university criteria and has been accepted by the examiners, candidates will be informed about the schedule for defense.

- **Deliverable 8(c) | Award of degree and convocation at the campus.**
  After successful thesis completion degree will be awarded.
ADMISSION CRITERIA
Admission Eligibility

The candidates for the program must have one of the following qualifications obtained from any of the universities incorporated by an act of the central or state legislature in India or other educational institutions established by an act of parliament or declared to be deemed as a university under section 3 of UGC Act, 1956, or possess an equivalent qualification recognized by the Ministry of HRD, Government of India, or an equivalent qualification from an institution approved by AICTE.

- A degree in M. Pharm with minimum 60% aggregate marks
- A degree in B. Pharm with 60% marks or equivalent grade point average
- At least two years of executive/managerial/academic experience in the relevant area as on 30th June 2014.
- In addition, GPAT qualified candidates will be given weightage in selection process.

**Age Limit:** Candidates must not be more than 55 years of age as on 30th June, 2014.

Candidates who fulfill the eligibility criteria, are required to fill the admission form with evidences of all particulars to be attached. All application forms will be screened by a separate screening committee whose representatives will be from Doctoral Research Committee and Experts from the University and Industry in the respective areas. The candidates short-listed on the basis of their academic record and relevant industry experience will appear in written test to be conducted by the University. Date, Syllabus and format will intimated to the registered candidates. The candidates will then appear for a personal interview for the final selection.

## Program Fees

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