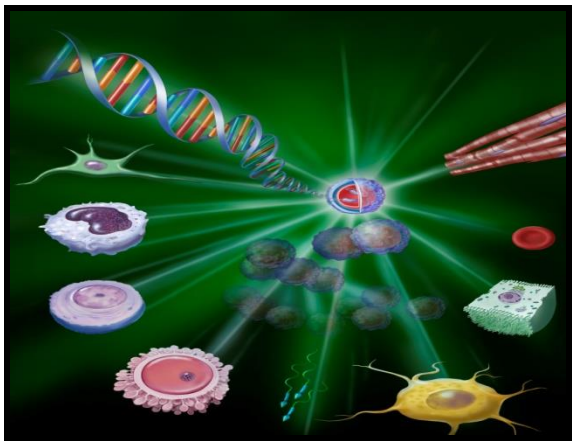
BARKATULLAH UNIVERSITY, BHOPAL- 462026

UGC & NAAC Accredited State University

Admissions to

Five Years Integrated M. Tech. in

Stem Cell Engineering



INFORMATION BROCHURE

(2017-18)

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1 ABOUT THE UNIVERSITY

The University formerly known as Bhopal University was established in 1970 in the capital city of Madhya Pradesh. In 1988, it was rechristened as the Barkatullah Vishwavidyalaya, in the living memory of the great freedom fighter, Prof. Maulana Barkatullah who belonged to Bhopal. The University campus, covering an area of approx. 360 acres of land, is located along Jabalpur-Jaipur National highway (NH-12) at a distance of about 3 Kms from the Habibganj Railway Station. The University complex includes various teaching departments like Life Sciences, Law, Humanities, Social Science, Physics, Pharmacy, Management Applied Geology, Institute of Technology and Institute of Open and Distance Education, Library, Faculty club. There are postgraduate, certificate and diploma courses along with M. Phil programmes, post-doctoral fellowship, etc. which caters regional and national needs. In addition to the conventional courses, the university also offers several innovative and job-oriented courses with major emphasis on interdisciplinary teaching and research.

2 ABOUT THE PROGRAMME

The mission of the five year integrated programme in Stem Cell Engineering is to provide students with a broad and flexible education in engineering and biological science as well as medically related subjects. The students are prepared to analyze, synthesize, and link knowledge in the multi-disciplinary fields, with the emphasis on qualitative approaches and methods. Our curriculum guides our students toward skill in creating new knowledge and technologies as well as applying current knowledge. In addition, students will be introduced to key practical techniques employed in the field. With these goals, this integrated programme is designed to include courses of study, seminars and Project/Thesis/Dissertation through which a student may develop his/her concepts and intellectual skills.

The multi-disciplinary nature of the programme enables the progression of passionate students into careers within frontier areas of technology and research. Students will be equipped with the skills essential for employment globally in relevant sectors and for subsequent PhD studies.

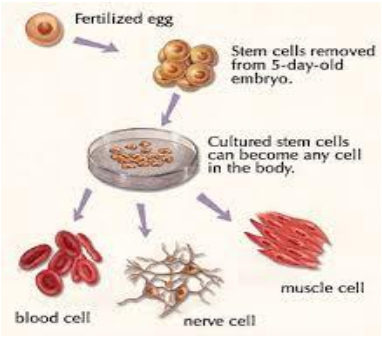
THE PROGRAMME AIMS TO:

- Stimulate and motivate students to enhance their perception of the subject by pursuing topics beyond the syllabus; progressing towards a broad and deep knowledge and understanding of the subject.
- Provide opportunities for candidates to learn and analyze independently.
- Install in candidates safe laboratory practices and equip them with the necessary laboratory skills to pursue the subject further.
- Promote an awareness of the use and development of scientific models.
- Develop attitudes relevant to science such as: initiative; inventiveness; objectivity; integrity; the skills of enquiry; concern for accuracy and precision.
- Provide the tools for candidates to develop an informed interest in scientific issues; become confident citizens in a technological world; participate in public debate on socio-scientific issues.
- Construct hypotheses and use them to make predictions.
- Plan investigations which may include testing a hypothesis.
- Know how to use apparatus and techniques skillfully, safely and effectively.
- Make and record observations methodically and with due regard for precision, accuracy and repeatability.
- Present and analyze raw data.
- Evaluate data, methods and techniques, identify limitations and suggest improvements.

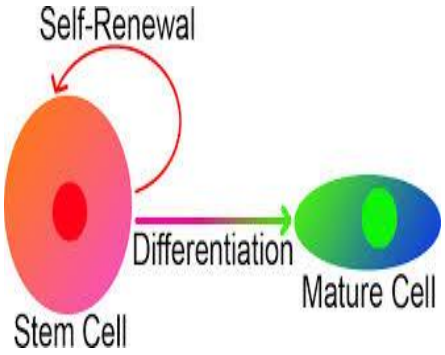
AN EXCITING ASSESSMENT FRAMEWORK FEATURING:

- Examination questions targeted to access full ability and technical skills of students.
- A variety of assessment methods including objective, short answer and essay questions/practical paper/Group discussions/Case study/Project Reports etc.
- A practical examination to reward candidates who have gained a wide range of laboratory and higher practical skills.

3. ABOUT STEM CELL ENGINEERING



Stem cells have the remarkable potential to develop into many different cell types in the body during early life and growth. In addition, in many tissues they serve as a sort of internal repair system, dividing essentially without limit to replenish other cells as long as the person or animal is still alive. When a stem cell divides, each new cell has the potential either to remain a stem cell or become another type of cell with a more specialized function, such as a muscle cell, a red blood cell, or a brain cell.



Stem cells are distinguished from other cell types by two important characteristics. First, they are unspecialized cells capable of renewing themselves through cell division, sometimes after long periods of inactivity. Second, under certain physiologic or experimental conditions, they can be induced to become tissue- or organ-specific cells with special functions. In some organs, such as the gut and bone marrow, stem cells regularly divide to repair and replace worn out or damaged tissues. In other organs, however, such as the pancreas and the heart, stem cells only divide under special conditions.

Stem cell research is one of the most fascinating areas of biology and because of their unique regenerative abilities; stem cells offer new potentials for treating diseases such as diabetes, and heart disease. Research on stem cells continues to advance knowledge about how an organism develops from a single cell and how healthy cells replace damaged cells in adult organisms.

CAREER OPPORTUNITIES IN STEM CELL ENGINEERING

Stem Cell and Regenerative Medicine is at the forefront of future therapies to repair disease and damaged organs. As the academic research base broadens and industry begins to adopt new technologies, the demand for specialists has increased substantially. As such, this unique research-led course offers high level employment opportunities in sectors like:

- Further academic studies (i.e. PhD)
- Biotechnology sector research/sales
- Stem cell business development

- Stem cell banking
- Stem cell patents
- Stem cell clinical translation
- Charity research development
- Pharmaceutical industry
- Stem cell regulatory bodies

All aspects of Five Years Integrated M. Tech Programme in Stem Cell Engineering at Barkatullah University, Bhopal are conducted in a supportive and rigorous scientific environment with the intention that students are expected to maximize their scientific potential and contribute to future healthcare applications.

COMPANIES WORKING IN THE AREA OF STEM CELL TECHNOLOGY

1. Stempeutics Research Private Limited, Bangalore
2. Stempeutics Research Private Limited, Manipal
3. Lifecell International Private Limited, Chennai
4. Babycell, Mumbai
5. Cryo Stem Cell Private Limited, Bangalore
6. International Stem Cell Services limited, Bangalore
7. Reliance Life Sciences, Mumbai
8. Advancells, Noida
9. Unistem, Noida
10. Novacord, Fortis Hospital, Gurgaon
11. Genelon Institute of Life Science Private Limited, Bangalore

and the list goes on……!

INSTITUTES WORKING IN THE AREA OF STEM CELL TECHNOLOGY

1. Indian Institute of Technology, Guwahati
2. Indian Institute of Technology, Delhi
3. Indian Institute of Technology, Mumbai
4. Institute for Stem Cell Biology and Regenerative Medicine, Bangalore
5. Center for Stem Cell Research, Christian Medical College Campus, Vellore, Tamilnadu
6. Center for Stem Cell Science, Hyderabad
7. National Institute for Research in Reproductive Health, Mumbai
8. National Center for Cell Science, Pune

9. Center for Cellular and Molecular Biology, Hyderabad
10. National Center for Biological Science, Bangalore

4. ELIGIBILITY

S. No.	Name of the Program	No. of Seats	Minimum Eligibility
1.	Five Years Integrated M. Tech Course in Stem Cell Engineering	25	10+2/Intermediate in physics, chemistry, mathematics/ physics, chemistry, biology/ physics, chemistry, biology, mathematics or equivalent examination from a recognized board.

5. HOW TO APPLY

1. Students seeking admission to Five Years Integrated M. Tech. course in Stem Cell Engineering have to apply **through MP ONLINE through Department of Bioscience, UTD, Barkatullah University, Bhopal.**

2. The application fee is as follows:

   GN/OBC candidate: Rs. 300

   SC/ST candidates: Rs. 150

3. Application fee is nonrefundable.

4. The hard copy of the completed application along with self attested copy of required documents can be sent in person or by post on an envelope superscribing on the top **'Application for Five Years Integrated M. Tech. Programme'**, to the following address:

   Department of Bioscience
   University Teaching Department
   Barkatullah University
   Bhopal-462026

6. **COURSE FEE :**

   The tuition fee for Five Years Integrated M. Tech Programme in Stem Cell Engineering is Rs.22, 000 / Semester.

   (Course fee can be changed at any time by the university without any prior notice)

7. ADMISSION PROCEDURE:

a. Admission to Five Years Integrated M. Tech. program in Stem Cell Engineering will be on basis of marks in the qualifying exam (10+2) or Entrance Test conducted by the University, as the case may be.

8. IMPORTANT DATES

Availability of application forms through MPONLINE	**25-04-17 to 24-05-17**
Last date for submission of completed application forms	**24-05-17**

9. IMPORTANT GUIDELINES

- Detailed Information Brochure is available at the University Website http://www.bubhopal.nic.in
- Check the Institute website for important updates.
- Check mails sent to the email address provided in your application, for all important communications and announcements.

10. **Contact us:** 9425008963