



# ENGMEDNEWS

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## Contents

Biomedical Syllabus in GATE 2020	2
Indian Biomedical Skills Consortium	4
Enhancing delivery of quality Healthcare	6
Knowledge of AI	9
Call for Elsevier Book Chapter	12

*Dear Members,*

*Greetings!*

*The Pessimist Sees Difficulty In Every Opportunity. The Optimist Sees Opportunity in Every Difficulty*

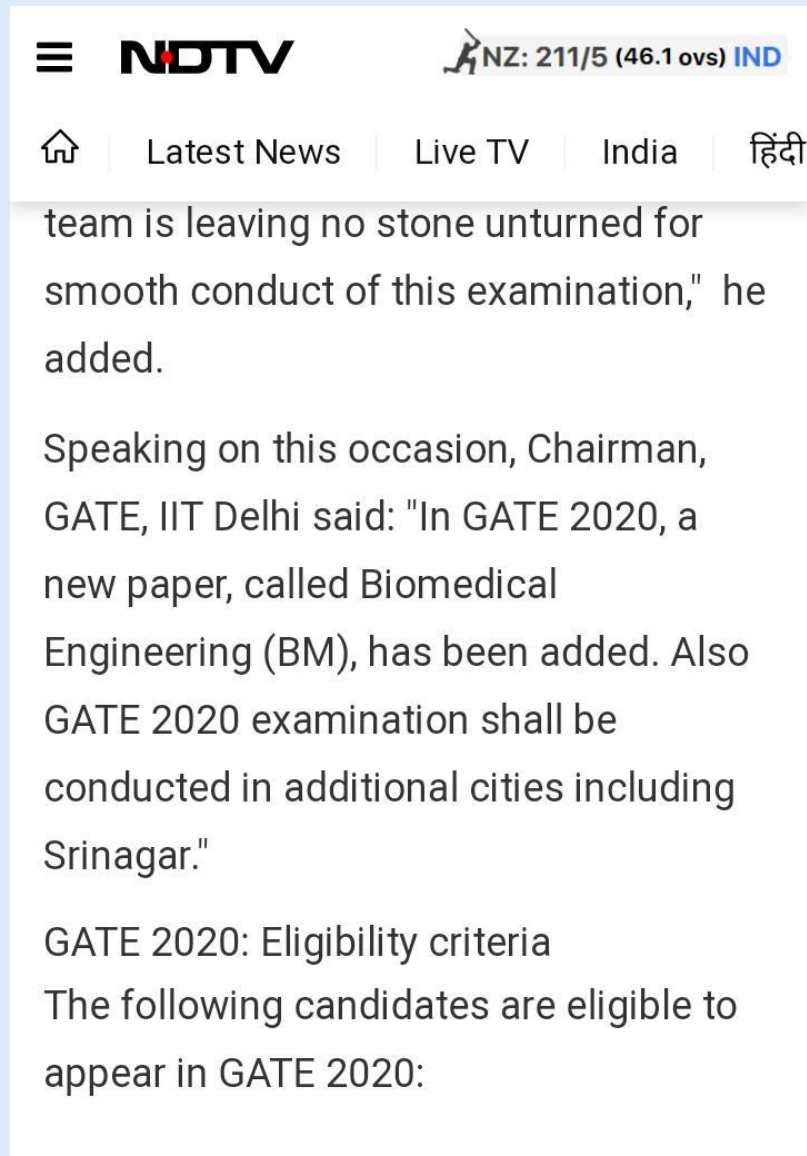
*Thank you very much for supporting the BMESI, continuously.*

*With Regards*

*Dr. Shruti Jain*  
*Editor-in-Chief*  
*ENGMEDNEWS*

# GOOD NEWS

## Biomedical Engineering (BM) has been added in GATE 2020



The image is a screenshot of a news article from NDTV. At the top, there is a navigation bar with the NDTV logo, a home icon, and menu items for 'Latest News', 'Live TV', 'India', and 'हिंदी'. A score indicator shows 'NZ: 211/5 (46.1 ovs) IND'. The main text of the article is as follows:

team is leaving no stone unturned for smooth conduct of this examination," he added.

Speaking on this occasion, Chairman, GATE, IIT Delhi said: "In GATE 2020, a new paper, called Biomedical Engineering (BM), has been added. Also GATE 2020 examination shall be conducted in additional cities including Srinagar."

GATE 2020: Eligibility criteria  
The following candidates are eligible to appear in GATE 2020:



GATE qualification is required for admissions to Postgraduate Programmes (Master's and Doctoral) with MHRD and other Government Scholarships/Assistantships in Engineering/Technology/Architecture/Science. The GATE score is also used by some PSUs for their recruitment and by several universities in India & abroad for admissions.

GATE 2020 score will be valid for THREE YEARS from the date of announcement of results.

### Eligibility

The following candidates are eligible to appear in GATE 2020:

**Bachelor's** degree holders in Engineering/Technology (4 years after 10+2 or 3 years after B.Sc./Diploma in Engineering/Technology) and those who are in the final year of such programmes.

**Bachelor's** degree holders in Architecture (Five years course)/Naval Architecture (Four years course) and those who are in the final year of such programmes.

**Bachelor's** degree holders of Four-year programme in science (B.S.) and those who are in the final year of such programmes.

**Master's** degree holders in any branch of Science/Mathematics/Statistics/Computer Applications or equivalent and those who are in the final year of such programmes.

**Holders** of Four-year Integrated Master's degree (Post B.Sc.) in Engineering/Technology and those who are in the second or higher year of such programmes.

**Holders** of Five-year Integrated Master's degree or Dual Degree in Engineering/Technology and those who are in the fourth or higher year of such programmes.

**Holders** of Five-year Integrated M.Sc. or Five-year integrated B.Sc./M.Sc. Dual Degree and those who are in the final year of such programmes.

**Candidates** with qualifications obtained through examinations conducted by professional societies recognized by UPSC/AICTE as equivalent to B.E./B.Tech. Those who have completed section A of AMIE or equivalent of such professional courses are also eligible.

All Candidates must apply online.  
For application, visit the following URL:

<http://gate.iitd.ac.in>

Further details can be obtained by accessing any of the GATE/JAM zonal website.



### Important Dates

September 03, 2019	Opening of Online Registration & Application Form
September 24, 2019	Closing of Online Application Form
October 01, 2019	End of Extended Period for Online Application
February 01, 02, 08 & 09, 2020	Examination Dates
March 16, 2020	Announcement of Results

### Examination Centres

GATE 2020 examination will be conducted in select cities & towns in India as well as in Six cities abroad.

### Examination Pattern

Examination for all the papers will be Computer Based Tests (CBT).

### Application Fee

Examination Centres in India	On or before 24 <sup>th</sup> Sep 2019	During the Extended Period
SC/ST/PwD/Female Candidates	₹750	₹1250
All other Candidates	₹1500	₹2000

### Examination Centres outside India ( All Candidates )

Addis Ababa, Colombo, Dhaka & Kathmandu	US\$50	US\$70
Dubai and Singapore	US\$100	US\$120



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[gate.iitr.ac.in](http://gate.iitr.ac.in)

# *Indian Biomedical Skill Consortium*

## **IBSC Information Sessions**

**14th July 2019**

Indian Biomedical Skill Consortium (IBSC) is a program initiated by Andhra Pradesh MedTech Zone (AMTZ) in collaboration with Association of Medical Device Industry (AiMeD) and Quality Council of India (QCI).

IBSC is skill competency certification for biomedical professionals. IBSC created value-based assessment covering educational, work experience and competency possessed by practitioners of biomedical engineering skills.

In the series of promotion IBSC team visited Chennai, Bangalore, Salem, Coimbatore, Cochin and had fruitful discussions with medical equipment maintenance service companies like Faber Sindore Biomedical Services Pvt Ltd, Jankar Health Solutions Pvt Ltd, Cyrix Health Care Pvt Ltd, TBS India Pvt Ltd and Sakar World Hospital.

Also visited MS Ramaiah Institute of Technology, Salem College of Engineering and Technology, Dr NGP Institute of Technology to motivate future BME professionals.





*Enhancing delivery of quality health care:  
Biomedical engineers act as a bridge between  
modern medicine, engineering*

As per the World Health Organization's (WHO) sustainable developmental goals (SDG 3), by 2030, countries should substantially increase health care spending to recruit, train, and retain skilled health care professionals (HCPs) to substantially reduce the epidemic of non-communicable diseases (NCDs). From the accessibility of thousands of innovative medical devices to increasing skill sets of HCPs, patient safety is now recognized as an indispensable arm of a healthcare setting. At a time when innovations are promising solutions to hitherto unmet medical needs, the call is now, more than ever to have professionals who can drive this change. This is where biomedical engineers (BMEs) become an indispensable part of the health sector. Working alongside the HCPs are BMEs, responsible for the overall inspection, management, and regulation of existing and future medical devices. Often, unsung heroes, a BME are the brain behind managing crisis during an entire treatment procedure.

While a doctor diagnoses and treats a patient, a BME ensures the medical devices function as per the requirement and is usually the first respondent to any emergency caused by technical malware. From the concept to market reach and clinical trials, BMEs are part of the health care ecosystem contributing to meeting the SDGs, especially universal health coverage.

As India witnesses a surge in the influx of innovative medical devices (<75 percent overall imports), there arises a greater need to recruit more skilled BMEs to evaluate the quality, efficacy, and safety of emerging technologies which will ultimately trickle down to benefit patients. Contrastingly, for every 10,000 patients, there are 0.31 BMEs.

The Union Budget 2019-20 focused on upgrading district hospitals, state government medical colleges and setting up state institutions of paramedical sciences. However, it did not include anything specific for the BME. Yet the good news is that the Ministry of Health and Family Welfare in Patient Safety Implementation Framework 2018-25 standards notified to ensure BMEs are available at health care facilities.

By 2020, every empaneled hospital is also directed to have a Hospital Infection Control Committee with BME as a member. Similarly, Indian Public Health Standards (IPHS) is revised with a provision for deploying at least one BME in each of the district hospitals.

Firstly, while recruiting BMEs, the medical industry has to shift focus from pharmacists and science graduates to specialists in biomedical engineering i.e., BMEs. Since a BME possesses a deep understanding of human physiology as well as a medical device, it is imperative that the right professional serves the required purpose. Secondly, one of the major gaps acting as a barrier in the delivery of quality care in the country today is that medical devices are considered the same as drugs in the policies. This confusion often weakens their significance as health care providers. If we are to achieve the SDGs by 2030, we must value the crucial role of BMEs in the capacity building of an overall health care ecosystem. While a BME possesses the skills to be a decisive authority in the design and evaluation of medical devices, their role goes beyond the expected responsibilities. For instance, they can serve immensely in the regulatory aspect of emerging medical devices. They evaluate information based on scientific parameters for the purpose of obtaining marketing authorization provided by the industry to regulatory authorities.

Another area, where BMEs can offer their expertise, is health technology assessment (HTA) i.e., decision-making authority in health care responsible for allocating limited funds to health interventions and technologies. The HTA agencies can consider including a BME professional in their multidisciplinary teams for better policy decision-making, especially involving medical technologies. As more expertise finds a space in a healthcare setting, the innovation of medical technologies will be strengthened and the contribution of HTA to sustainable health systems will be enhanced.

Furthermore, a biomedical engineer can also aid in managing multiple subsets of health care. From supporting and promoting patient safety by applying engineering, economic, communication and managerial skills to health technologies, a BME professional becomes an imminent part of the entire health care setup. As patient safety becomes increasingly dependent on more sophisticated technologies, biomedical engineers act as a bridge between modern medicine and equally modern engineering.

From analyzing and recording the event to offering a diagnostic solution, a BME operates within a health-care facility. Possessing a vast pool of information on core issues such as wrong maintenance, design deficiencies, human-machine interaction deficiencies, inappropriate use, they can rectify the clinical errors. Because of their expertise in systems analysis, communication systems coupled with the integration of IT, market research, and organizational processes, a BME plays a vital role in ensuring the safe and effective integration as well as interoperability of medical devices.

Enhance your skills and grab the upcoming opportunities

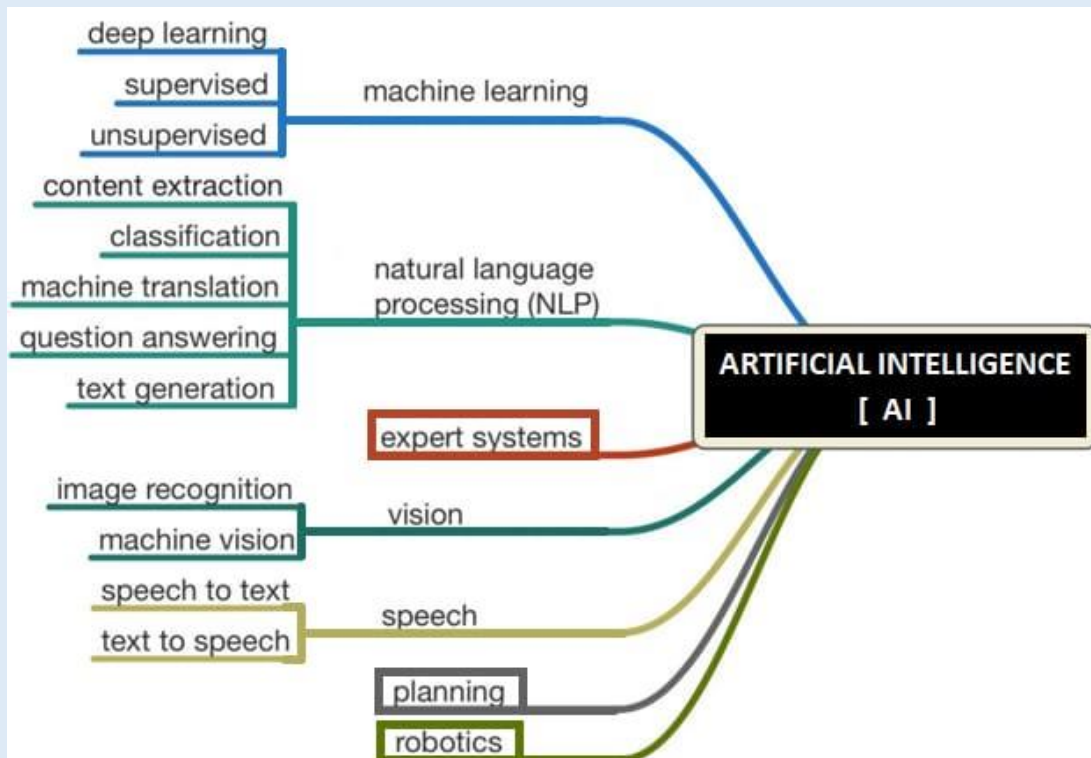
Best Wishes to BMEs



# KNOWLEDGE FOR AI

Artificial intelligence (AI) is an area of computer science that gives importance to the creation of intelligent machines that work and reacts like humans. AI is the simulation of human intelligence processes by machines, using computer systems. These processes include the acquisition of information and rules for using the information, reasoning and self-correction. Some of the applications of AI include expert systems, speech recognition and machine vision.

Artificial Intelligence is one among the emerging technologies which tries to simulate human reasoning in AI systems. AI is wide-ranging branch of computer science concerned with building smart machines capable of performing tasks the typically require human intelligence. AI is an inter-disciplinary science with multiple approaches, but advancements in machine learning and deep learning are creating a paradigm shift in virtually every sector of the tech industry.



AI can be categorized in two types, weak or strong. Weak AI is also known as narrow AI. Narrow AI is an AI system that is designed and trained for a particular task, for example, Virtual personal assistants, such as Apple's Siri. Strong AI, also known as artificial general intelligence. Strong AI is an AI system with generalized human thinking abilities. A strong AI system is able to find a solution without human interaction. The hardware, software and staffing costs for AI can be expensive.

Popular AI cloud offerings include Amazon AI services, Google AI services, Microsoft Cognitive Services, IBM Watson Assistant etc. While an AI tool launches new business operations, the use of artificial intelligence increases moral questions. It's because deep learning algorithms of AI system, which corrupts many of the most advanced AI tools are only as smart as the data they are given in training. Artificial Intelligence will help people to understand that AI will simply improve products and services, not replace the humans that use them.

### **Types of artificial intelligence**

1. **Reactive machines:** “Deep Blue” is an example. Deep Blue makes IBM chess program that beat Garry Kasparov in the year 1997. Deep Blue can identify chessboard coins and make predictions, but it has no memory and cannot record the data's. It analyzes possible moves like its own and its opponent and chooses the most strategic move. Instead of Deep Blue, Google's AlphaGO both are designed for narrow purposes AI systems and cannot easily be applied to another situation.
2. **Limited memory:** These can use in past experiences to inform future decisions. For example, self-driving cars. The observations from here are not stored permanently.

3. **Theory of mind:** It allows others have their own beliefs, desires and intentions that impact the decisions they make. This kind of AI does not yet exist.
  
4. **Self-awareness:** AI systems have consciousness. Machines with self-awareness understand their current state and can use the information to imagine what others are feeling. This type of AI does not yet exist. But, may come in future.

**Applications of AI:** Machine Learning (ML), Natural Language Processing (NLP), Vision, Robotics , Autonomous Vehicles.

# Call for Elsevier Book Chapter

## COMPUTATIONAL INTELLIGENCE AND ITS APPLICATIONS IN HEALTHCARE

### CALL FOR BOOK CHAPTER PROPOSAL

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Abstract Submission.....: **15Aug 2019**

Full Chapter Submission: **31 Oct 2019**

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### COMPUTATIONAL INTELLIGENCE AND ITS APPLICATIONS IN HEALTHCARE

**Publisher: ELSEVIER** SciTech Connect

To be published by Elsevier, under book title “Computational Intelligence and its Applications in Healthcare”. This book is intended to present rapidly growing application areas of computational intelligence to healthcare systems, including intelligent synthetic characters, man-machine interface, menu generators, analysis of user acceptance, pictures archiving and communication systems. This book will serve the best purpose of students, research scholars, academician, healthcare and medical industry practitioners to provide better insights into modern contemporary healthcare and medical related global trends, issues and practices.

We invite original unpublished manuscripts which are not submitted anywhere in parallel to any other Journal, conference, symposium, workshop or book. We welcome submissions from researchers, academia, industry, different government bodies, and different stakeholders for addressing the issues and challenges of healthcare, presenting novel techniques, experimental results, or theoretical approaches. Survey/studies that offer a perspective on related work and identify key challenges for future research are also in the scope of the book. The maximum similarity index allowed is 10%. **Authors must go through the submission procedure in detail before proceeding for submission.**

**Honorarium:** The Publisher will pay Authors/Contributors an honorarium determined by the publisher after acceptance and signing the copyright agreement of the manuscript.

#### TOPICS OF INTEREST

The main scope of this book is to bring together applications of computational intelligence which are applicable and useful for healthcare. In order to give a wide landscape of techniques that can be successfully applied and to show how such techniques should be adapted to each domain. The proposed topics of interest include, (but are not limited to):



- Fuzzy logic
- Neural networks
- Evolutionary computation
- Learning theory
- Probabilistic methods
- Telemedicine and Robotics
- Artificial Intelligence and biological application
- Soft computing
- Image Processing and Signal processing
- Genetic algorithm
- Modern development of Information Technology in healthcare applications

**DETAILED WEBSITE**

<https://sites.google.com/view/book-ciah-2019>

Visit the website for any updates in deadlines due to inevitable circumstances.

**SUBMISSION LINK (STAGE-1)**

<https://forms.gle/r6sqEtQP4G3vyPU6>

Shortlisted authors through Stage-1 will be notified separately for subsequent steps.

**DEADLINES TO REMEMBER**

<b>Abstract Submission (Stage-1)</b>	<b>15 Aug 2019</b>
<b>Abstract Submission (Stage-2)</b>	<b>01 Sep 2019</b>
<b>Full Chapter Submission</b>	<b>31 Oct 2019</b>
<b>Final Decision</b>	<b>30 Nov 2019</b>

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The Editorial Team of ENGMED NEWS wishes everyone a very

## PROSPEROUS AND HAPPY

✚ *Janmashtami*

✚ *Muharram*

✚ *Ganesh Chaturthi*

✚ *Abhaneri Festival*

✚ *Naropa Festival*

✚ *Onam Festival*

✚ *Chakradhar Samaroh*

✚ *Karni Mata Festival*

✚ *Pune International Literary Festival*

✚ *Ziro Festival*