PROSPECTUS

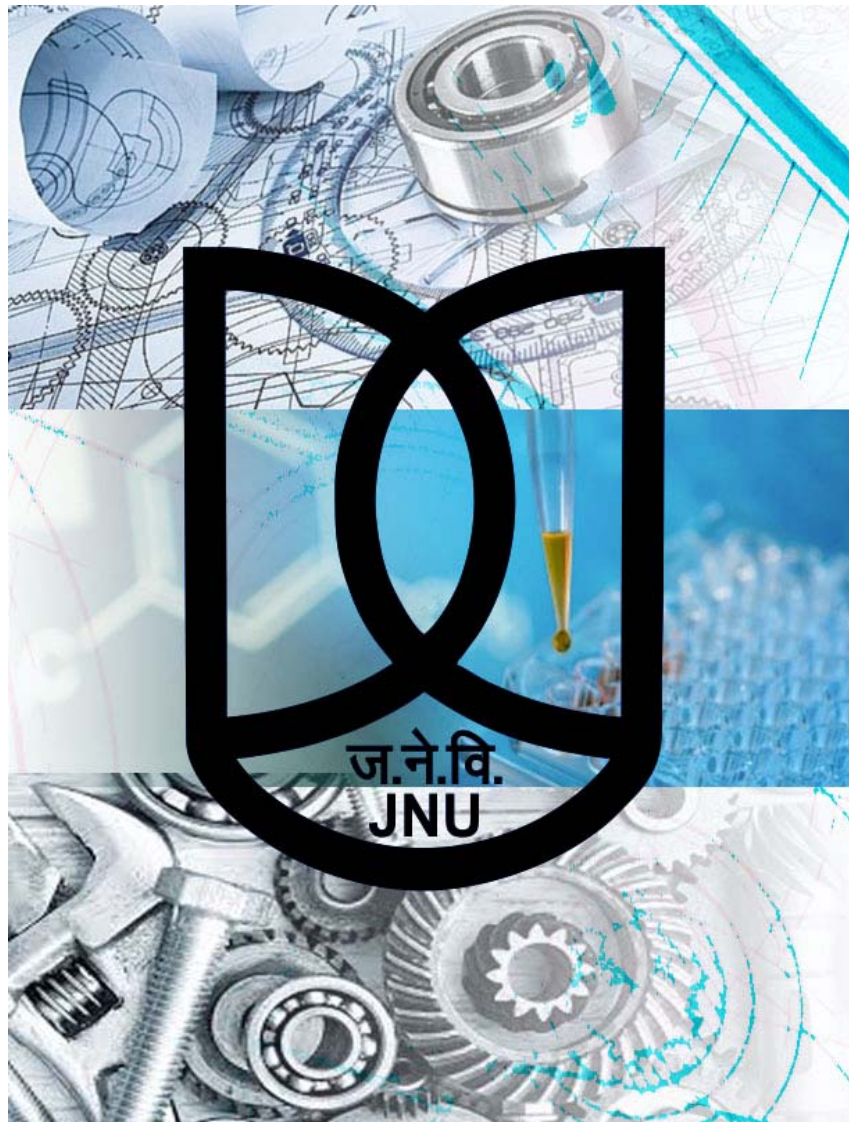## (2018-19)

School of Engineering
Jawaharlal Nehru University
New Delhi-110067

General

The Jawaharlal Nehru University, constituted under the Jawaharlal Nehru University Act 1966, (53 of 1966) came into existence in 1969. Its objectives, as defined in the First Schedule of the Act, are as follows: "The University shall endeavor to promote the principles for which Jawaharlal Nehru worked during his life-time, national integration, social justice, secularism, democratic way of life, international understanding and scientific approach to the problems of society. Towards this end, the University shall: (i) foster the composite culture of India and establish such departments or institutions as may be required for the study and development of the languages, arts and culture of India; (ii) take special measures to facilitate students and teachers from all over India to join the University and participate in its academic programmes; (iii) promote in the students and teachers an awareness and understanding of the social needs of the country and prepare them for fulfilling such needs; (iv) make special provision for integrated courses in humanities, science and technology in the educational programmes of the University; (v) take appropriate measures for promoting interdisciplinary studies in the University; (vi) establish such departments or institutions as may be necessary for the study of languages, literature and life of foreign countries with a view to inculcating in the students a world perspective and international understanding; (vii) provide facilities for students and teachers from other countries to participate in the academic programmes and life of the University."

In the light of the above, the approach of the University has been to evolve policies and programmes which will make Jawaharlal Nehru University a distinct addition to the national resources in higher education rather than a mere quantitative expansion of facilities which already exist. The University has identified and is concentrating upon some major academic programmes, which are of relevance to national progress and development. The basic academic units of the University are not single discipline departments but multi-disciplinary Schools of Studies. A School has been visualised as a community of scholars from disciplines which are linked with each other organically in terms of their subject-matter and methodology as well as in terms of problem areas. Some Schools are made up of a number of Centres which constitute the units operating within the broad framework of a School. A Centre has been defined as a community of scholars irrespective of their disciplines engaged in clearly identified inter-disciplinary programmes of research and teaching.

The University is ranked #2 by NIRF 2018 and accredited by NAAC at A++ level with highest grade point in India. The University includes the following Schools of interdisciplinary research and teaching besides some Special Centres of Study:

(i)   School of International Studies
(ii)   School of Language, Literature and Culture Studies
(iii) School of Social Sciences
(iv)   School of Arts and Aesthetics
(v)   School of Life Sciences
(vi)   School of Environmental Sciences
(vii) School of Computer and Systems Sciences
(viii) School of Physical Sciences
(ix)   School of Computational and Integrative Sciences
(x)   School of Biotechnology

(xi)　　School of Sanskrit and Indic Studies
(xii)　　Special Centre for Molecular Medicine
(xiii)　　Special Centre for the Study of Law and Governance
(xiv)　　Special Centre for Nano Sciences
(xv)　　Special Centre for Disaster Research
(xvi)　　Special Centre for E-Learning

School of Engineering

The School of Engineering offers a five year dual degree programme with *BTech* in an Engineering discipline, and a Master's (*MS/MTech*) programme with specializations in Social Science/Humanities/Science/Technology from July 2018. The thrust areas of the *BTech* program will cover most of the well-known disciplines of Sciences and Technology. The courses of this programme will consist of Sciences and Engineering including various options such as Communications, Environment, Electronics and Information Technology. Considering the all-pervasive and universal nature of Technology today which cuts across disciplines, viz. Sciences, Engineering, Humanities and Social Sciences, study of Communications, Environment and Information Technology will have to be brought in consonance with the understanding of various aspects of Economics, Commerce, Sociology, Politics, History and Linguistics. Rigorous data analysis (big data analysis, for example) on various social aspects have strengthened our understanding of social behaviour. The Humanities and Social Sciences no longer operate in isolation. In fact, the recent past has been a witness to numerous interdisciplinary collaborations: Communications with Languages and Linguistics; Environmental Engineering with Geography; Economic Strategies and Commercial Implications with Computing Methods etc. Engineering has thus permeated and also extended extensive support to many aspects of Humanities and Social Sciences. Similarly, the Humanities and Social Sciences have helped the Engineering Sciences to construct models that factor in social behaviour and provide socially relevant solutions to various problems.

JNU prides itself as the hub of Social and Economic ideas that shape our academia and industry. JNU is also on the forefront of research in Sciences, International Studies, Languages and Linguistics. With these strengths, JNU hopes in conjunction with technology to enable the students to learn and apply technology to the real life problems associated with the Indian society. The new curriculum of the School of Engineering, which integrates both technology and society, has a vision to shape and to provide leadership in imparting knowledge and training to the younger generation.

The five-year dual degree programme comprises *BTech* in an engineering discipline and Master's programme with specialization in Social Science/ Humanities/ Science/ Technology. This is one of the very few programmes in the country, where the student would acquire skills in Technology and its application to a sustainable development of society.

In the first half of the dual degree programme, the students would need to do compulsory foundation courses in the areas of basic sciences, humanities, social sciences and engineering sciences apart from the departmental requirements in the core engineering discipline. The students will have options of choosing open category electives from a pool of courses to develop broad inter-disciplinary knowledge base. This will give them an opportunity to pursue *MS/MTech* in an area outside their parent discipline. The proposed dual degree programme in JNU would be novel in the sense that it would extend an opportunity to the

students, especially in the fourth and fifth year of their programme to involve themselves in projects/dissertations and courses on Humanities, International Studies, Sciences, Languages, Linguistics and Social Sciences, in order to understand the demands of such disciplines and acquaint themselves with the frontier areas. For example, the dual degree programme would also try to address the dynamics of economics, physical, biological and environmental phenomena through the prism of engineering. It is a fundamental skill that all successful engineering firms employ in order to retain competitive advantage and market share. The programme would provide students with the tools to optimize profits, minimize costs, analyze various scenarios, forecast fluctuations in business cycles, and more.

Also, the proposed programme would offer beyond these goals a set of special skills that would make engineers sensitive to their social and environmental responsibility. The programme would emphasize further that generating returns for society and the larger community is indispensable. With such an engaging and holistic learning approach, students will have the opportunity to become better problem solvers.

For all Five years dual degree programmes, students will be admitted after 10+2 schooling through *JEE* Main ranking. The School of Engineering will offer the following Five years Dual degree programmes:

  i. *BTech* in Computer Science and Engineering and *MS*/*MTech* in Social Sciences/ Humanities/ Science/ Technology
 ii. *BTech* in Electronics and Communication Engineering and *MS*/*MTech* in Social Sciences/ Humanities/ Science/ Technology
iii. *BTech* in Civil and Environmental Engineering and *MS*/*MTech* in Social Sciences/ Humanities/ Science/ Technology
 iv. *BTech* in Chemical Engineering and *MS*/*MTech* in Social Sciences/ Humanities/ Science/ Technology
  v. *BTech* in Mechanical Engineering and *MS*/*MTech* in Social Sciences/ Humanities/ Science/ Technology

The list of available *MTech* specializations is as below:

- Computer Science and Engineering
- VLSI
- Mechanical Engineering
- Chemical Engineering
- Environmental Engineering

The list of available *MS* specializations is as below:
- Korean Studies
- Environmental Science
- Computational Biology
- Computational Finance
- Computational Linguistic
- Management & Entrepreneurship

However, of the five proposed Dual degree programmes, JNU will start the following TWO Dual degree programmes from session 2018-2019:

(i) Computer Science & Engineering, and
(ii) Electronics & Communication Engineering

The Credit Requirements of the Course

The minimum credit requirements for a dual* degree programme would be 183. The duration of the program is 10 semesters. Broadly, it consists of approximately 6 semesters of undergraduate engineering curriculum followed by approximately 2 semesters of post-graduate curriculum and last 2 semesters of dissertation. The curriculum for the *MTech* component will either be a continuation of the undergraduate Engineering discipline or one from the pool of *MS* specializations.

The program consists of Humanities and Social Sciences (*HS*), Basic Sciences (*BS*), Engineering Foundation (*EF*), Design and Innovation (*DI*), Bachelor Core (*BC*), Bachelor Elective (*BE*), Open Elective (*OE*), Masters Core (*MC*), Masters Elective (*ME*) and Dissertation (*DS*). There will be a compulsory dissertation (concerned specialization) in the last two semesters. The students can do additional credits through open choice of courses, which will allow them to develop broad inter-disciplinary knowledge base and opportunity to do their *MS*/*MTech* in discipline other than *BTech*.

The overall credit structure is as follows:

Category	Credits
Humanities and Social Sciences (*HS*)	10
Basic Sciences (*BS*)	23
Engineering Foundation (*EF*)	22
Design & Innovation (*DI*)	04
Bachelor Core (*BC*)	40
Bachelor Elective (*BE*)	18
Open Elective (*OE*)	12
MS Core (*MC*)	06
MS Elective (*ME*)	24
Dissertation (*DS*)	24
Total	**183**

* There will be no exit option available for getting a degree before 5years.

The Semester-wise credit structure of the course is as follows:

Semester	Category	No. of Course	Credits	Total Credits
I	*HS*	2	4	
	BS	2	7	19
	EF	2	6	
	DI	1	2	
	Non-Credit	1	-	
II	*HS*	3	2	
	BS	3	12	20
	EF	1	4	
	DI	1	2	
	Non-Credit	1	-	

III	*BS*	1	4	
	EF	1	4	20
	BC	3	12	
IV	*EF*	2	8	22
	BC	3	12	
	HS	1	2	
V	*BC*	2	8	20
	BE	1	4	
	HS	1	2	
	OE	2	6	
VI	*BC*	2	8	
	BE	1	4	18
	OE	2	6	
VII	*BE*	2	10	19
	MC	2-3	6-9	
	ME	1-0	3-0	
VIII	*ME*	5	15	15
IX	*ME*	2	6	15
	DS	1	9	
X	*DS*	-	15	15
Overall Minimum Credits				**183**

Semester wise programme structure of the Dual Degree course is as follows:

Semester I

	Course Name	L-T-P	Credits	Category
1.	Humanities and Social Sciences	2-0-0	2	*HS*
2.	Environmental Studies	2-0-2	3	*BS*
3.	Engineering Mathematics-I (Calculus and Transform)	4-0-0	4	*BS*
4.	Engineering Foundation-I (Computer Programming)	2-0-4	4	*EF*
6.	Introduction to Engineering-I (Lecture/Visit/Demo/Doing)	1-0-2	2	*EF*
7.	Engineering Drawing & Visualization	0-0-4	2	*DI*
8.	Principles of Economics	2-0-0	2	*HS*
9.	English in Practice	2-0-2	Non-credit	
		Total (19)	*HS*-4, *BS*-7, *EF*-6, *DI*-2	

*Non-credit course: Need to pass Basic English course

Semester II

	Course Name	L-T-P	Credits	Category
1.	Physics-I	3-0-2	4	*BS*
2.	Chemistry-I	3-0-2	4	*BS*
3.	Engineering Mathematics-II (Probability and Statistics)	4-0-0	4	*BS*
4.	Engineering Foundation-II (Data Structure)	3-0-2	4	*EF*
5.	Introduction to Engineering-II (Engineering Specific)	1-0-2	Non-Credit	*EF*
6.	Product Realization	0-0-4	2	*DI*
7.	IPR and Law	2-0-0	2	*HS*
		Total (20)		*BS*-12, *EF*-4, *DI*-2, *HS*-2

Semester III

	Course Name	L-T-P	Credits	Category
1.	Engineering Foundation-III		4	*EF*
2	Biology/Chemistry-II/Physics-II		4	*BS*
3.	Bachelor Core-I		4	*BC*
4.	Bachelor Core-II		4	*BC*
5.	Bachelor Core-III		4	*BC*
		Total (20)		*EF*-4, *BS*-4, *BC*-12

Semester IV

	Course Name	L-T-P	Credits	Category
1.	Engineering Foundation-1V (Numerical Analysis)		4	*EF*
2.	Engineering Foundation-V		4	*EF*
3.	Bachelor Core-IV		4	*BC*
4.	Bachelor Core-V		4	*BC*
5.	Bachelor Core-VI		4	*BC*
6.	Professional Practice & Ethics		2	*HS*
7	Optional Course-II			
		Total 22		*EF*-8, *BC*-12, *HS*-2

Semester V

	Course Name	L-T-P	Credits	Category
1.	Bachelor Core-VII		4	*BC*
2.	Bachelor Core-VIII		4	*BC*
3.	Bachelor Elective- I		4	*BE*
4.	Technical Writing		2	*HS*
5.	Open-Elective-I		3	*OE*

			3	OE
6.	Open-Elective-II		3	OE
7	Optional Course-III			
		Total (20)	HS-2, BC-8, BE-4, OE-6	

Semester VI

	Course Name	L-T-P	Credits	Category
1.	Bachelor Core-IX		4	BC
2.	Bachelor Core- X		4	BC
3.	Bachelor Elective- II		4	BE
4.	Open-Elective-III		3	OE
5.	Open-Elective-IV		3	OE
		Total (18)	BC-8, BE-4, OE-6	

Semester VII

	Course Name	L-T-P	Credits	Category
1.	Project (Engineering Specific)		6	BE
2.	Bachelor Elective -III		4	BE
3.	Master Core-I		3	MC
4.	Master Core-II		3	MC
5.	Master Core/ Master Specialization-I		3	ME
		Total (19)	BE- 10, MC-6, ME-3	

Semester VIII

	Course Name	L-T-P	Credits	Category
1.	Master Specialization –II		3	ME
2.	Master Specialization –III		3	ME
3.	Master Specialization –IV		3	ME
4.	Master Specialization –V		3	ME
5.	Master Specialization –VI		3	ME
		Total (15)	ME-15	

Semester IX

	Course Name	L-T-P	Credits	Category
1.	Master Specialization-VII		3	ME
2.	Master Specialization-VIII		3	ME
3.	Dissertation		9	DS
		Total (15)	ME-6, DS-9	

Semester X

	Course Name	L-T-P	Credits	Category
1.	Dissertation		15	DS
		Total (15)	DS-15	

For complete details of the courses along with the syllabus **Click (hyperlink)**

The Fee Structure

The tuition fee structure for the students, admitted to the School of Engineering, is as follows.

S. No.	Head of Fee	Odd Semester & Even Semester			
		GENERAL/ OBC			SC/ST/PH
		Most Economically Backward students (Income below Rp 1 Lac)	Other Economically Backward students (Income Rp 1 Lac to 5 Lac)	Income above Rp 5 Lac	All
1.	Tuition Fee per semester	0	20,833.00	62,500	0

The Institute fee structure for all categories of the students, admitted to the School of Engineering, is as follows.

S. No.	Head of Fee	In Rupees
1.	Student Activity Fee (per sem.)	2500
2.	Institute Development Fund (per sem)	1000
3.	Admission Fee (One Time)	1000
4.	Examination Fee (per year)	1000
5.	Medical Insurance (per year)	500
6.	Alumni Fee (One Time)	1000
7.	Registration Fee (One Time)	1000
8.	Security Deposit (Refundable: One Time)	5000

The outstation candidates, admitted to the programmes of study of the University, will be considered for hostel accommodation as per rules of the University subject to availability of hostel accommodation. Grant of admission in a University would not ensure automatic allotment of hostel accommodation and that the same will be offered subject to availability. No Candidate shall be eligible to register himself/herself for a full-time programme of study if he/she is already registered for any full-time programme of study in this University or any other University/Institution.