



INDIA RANKINGS 2020

NATIONAL INSTITUTIONAL RANKING FRAMEWORK

Methodology for Ranking of Academic Institutions in India

(RANKING METRICS FOR ENGINEERING)



Ministry of Human Resource Development

Summary of Ranking Parameters and Weightages- 2020

(Engineering)

Sr. No.	Parameter	Marks	Weightage
1	Teaching, Learning & Resources	100	0.30
2	Research and Professional Practice	100	0.30
3	Graduation Outcomes	100	0.20
4	Outreach and Inclusivity	100	0.10
5	Perception	100	0.10

S.No.	Parameters	Marks
1.	Teaching, Learning & Resources (TLR) Ranking weight: 0.30	100
	A. Student Strength including Doctoral Students(SS): 20 marks B. Faculty-student ratio with emphasis on permanent faculty (FSR): 30 marks C. Combined metric for Faculty with PhD (or equivalent) and Experience (FQE): 20 marks D. Financial Resources and their Utilisation (FRU): 30 marks	
2.	Research and Professional Practice (RP) Ranking weight: 0.30	100
	A. Combined metric for Publications (PU): 35 marks B. Combined metric for Quality of Publications (QP): 40 marks C. IPR and Patents: Published and Granted (IPR): 15 marks D. Footprint of Projects and Professional Practice (FPPP): 10 marks	
3.	Graduation Outcomes (GO) Ranking weight: 0.20	100
	A. Combined metric for Placement and Higher Studies (GPH): 40 marks B. Metric for University Examinations (GUE): 15 marks C. Median Salary (GMS): 25 marks D. Metric for Number of Ph.D. Students Graduated (GPHD): 20 marks	
4.	Outreach and Inclusivity (OI) Ranking weight: 0.10	100
	A. Percentage of Students from other States/Countries (Region Diversity RD): 30 marks B. Percentage of Women (Women Diversity WD): 30 marks C. Economically and Socially Challenged Students (ESCS): 20 marks D. Facilities for Physically Challenged Students (PCS): 20 marks	
5.	Perception (PR) Ranking weight: 0.10	100
	A. Peer Perception: Employers & Academic Peer (PR): 100 marks	

1. Teaching, Learning & Resources (TLR): 100 marks

- **Ranking weight: 0.30**

- **Overall Assessment Metric:**

$$\text{TLR} = \text{SS (20)} + \text{FSR (30)} + \text{FQE (20)} + \text{FRU (30)}$$

- **Component metrics based on :**

A. Student Strength including Ph.D. Students: SS

B. Faculty-Student Ratio with emphasis on permanent faculty: FSR

**C. Combined metric for Faculty with PhD (or equivalent) and Experience:
FQE**

D. Financial Resources and Their Utilisation: FRU

A. Student Strength including Ph.D. students (SS): 20 Marks

- $SS = f(N_T, N_E) \times 15 + f(N_P) \times 5$
- The functions $f(N_T, N_E)$ and $f(N_P)$ are functions to be determined by NIRF.
- N_T : Total sanctioned approved intake in the institution considering all UG and PG programs of the institution.
- N_E : Total number of students enrolled in the institution considering all UG and PG Programs of the institution.
- N_P = Total number of students enrolled for the doctoral program till previous academic year.
- **Primary Data: To be provided in a prescribed Format.**

B. Faculty-Student Ratio with emphasis on permanent faculty (FSR): 30 marks

- **FSR = 30 × [15 × (F/N)]**
- $N = N_T + N_p$
- F: Full time regular faculty in the institution in the previous year.
- Regular appointment means Faculty on Full time basis. *Faculty on contract basis/ad-hoc basis will be considered if the concerned faculty has taught in both the semesters of academic year 2018-19.*
- Faculty members with Ph.D. and M.E./M.Tech. will be considered and counted here. Faculty member with a Bachelor's degree will not be counted.
- Expected ratio is 1:15 to score maximum marks.
- **For F/N < 1: 50, FSR will be set to zero.**

- *Primary Data: Faculty List to be provided in the Prescribed Format.*

C. Combined Metric for Faculty with PhD (or equivalent) and Experience (FQE): 20 marks

- $FQ = 10 \times (F_{RA}/95)$, $F_{RA} < 95\%$;
- $FQ = 10$, $F_{RA} \geq 95\%$.
- *Here F_{RA} is the percentage of Faculty with Ph.D. (or equivalent qualification) with respect to the total no. of faculty required or actual faculty whichever is higher, in the previous year.*

F1=Fraction with Experience up to 8 years;

F2= Fraction with Experience between 8+ to 15 years;

F3=Fraction with Experience > 15 years.

- $FE = 3\min(3F1, 1) + 3 \min(3F2, 1) + 4 \min(3F3, 1)$

Rationale: Full marks for a ratio of 1:1:1

- $FQE = FQ + FE$
- *Primary Data: Faculty List in the Prescribed Format.*

D: Financial Resources and their Utilisation (FRU): 30 Marks

- **FRU = 7.5×f(BC) + 22.5×f(BO)**
- BC: Average Annual Capital Expenditure per student for previous three years pertaining to engineering discipline only. (**Excluding expenditure on construction of new buildings**)
- BO: Average Annual Operational(or Recurring) Expenditure per student for previous three years pertaining to engineering discipline only. (**Excluding maintenance of hostels and allied services**)

- *Primary Data: Figures in prescribed format for each.*

2. Research and Professional Practice (RP): 100 marks

- **Ranking weight: 0.30**
- **Overall Assessment Metric:**
$$RP = PU(35) + QP(40) + IPR(15) + FPPP(10)$$
- **The component metrics explained on following pages.**
 - A. Combined Metric for Publications: PU**
 - B. Combined Metric for Quality of Publications: QP**
 - C. IPR and Patents: Patents Published and Granted: IPR**
 - D. Footprint of Projects and Professional Practice: FPPP**

A. Combined metric for Publications (PU): 35 marks

- $PU = 35 \times f(P/F_{RQ})$
- *P is weighted number of publications as ascertained from suitable third party sources.*
- *F_{RQ} is the maximum of nominal number of faculty members as calculated on the basis of a required FSR of 1:15 or the available faculty in the institution.*

- **Sources: Third party sources.**

B. Combined metric for Quality of Publications (QP): 40 Marks

- $QP = 20 \times f(CC/F_{RQ}) + 20 \times f(TOP25P/P)$
- Here CC is Total Citation Count over previous three years.
- P is as computed for PU.
- TOP25P: Number of citations in top 25 percentile averaged over the previous three years.
- F_{RQ} is the maximum of nominal number of faculty members as calculated on the basis of a required FSR of 1:15 or the available faculty in the institution.
- *Primary Data: Third Party Sources.*

C. IPR and Patents: Patents Published and Granted (IPR): 15 marks

- **$IPR = IPG + IPP$**

$IPG = 10 \times f(PG)$

- PG is the number of patents granted over the previous three years.

$IPP = 5 \times f(PP)$

- PP: No. of patents published over the previous three years.
- *Primary Data: Third Party Sources.*

D. Footprint of Projects and Professional Practice (FPPP): 10 marks

- **FPPP = FPR + FPC**
- **FPR = 7.5 × f (RF)**
- RF is average annual research funding earnings (amount actually received in rupees) per faculty at institute level in previous three years.
- **FPC = 2.5 × f (CF)**
- CF is average annual consultancy amount (amount actually received in rupees) per faculty at institute level in previous three years.

3. Graduation Outcome (GO):100 marks

- **Ranking weight: 0.20**
- **Overall Assessment Metric:**
- **$GO = GPH(40) + GUE(15) + GMS(25) + GPHD(20)$**
- **The component metrics are explained on the following pages:**
 - A. Combined metric for Placement and Higher Studies: GPH**
 - B. Metric for University Examinations: GUE**
 - C. Median Salary: GMS**
 - D. Metric for Number of Ph.D. Students Graduated: GPHD**

A. Combined Metric for Placement and Higher Studies (GPH): 40 marks

- **$GPH = 40 \times (N_p/100 + N_{hs}/100)$**
- N_p = Percentage of graduating students (in UG/ PG programs) placed in the previous three years.
- N_{hs} = Percentage of graduating students (in UG/ PG programs) who have been selected for higher studies in the previous three years.
- ***Primary Data: To be provided in prescribed format.***

B. Metric for University Examinations (GUE): 15 Marks

- **$GUE = 15 \times \min [(N_g/80), 1]$**
- N_g is the percentage of Students (as a fraction of the approved intake), averaged over previous three years, passing the respective university examinations in stipulated time for the program in which enrolled.
- *Primary Data: To be provided in the prescribed format.*

C. Median Salary(GMS): 25 Marks

- $GMS = 25 \times f (MS)$
- MS = Median salary of graduates (in UG/PG program) in the previous three years from an institution.
- *Primary Data: To be provided in the prescribed format.*

D. Metric for Number of Ph.D Students Graduated (GPHD): 20 Marks

- **GPHD = 20 × f(N_{phd})**
- N_{phd} = Average number of Ph.D students graduated (awarded Ph.D) over the previous three years.
- ***Primary Data: Number of graduating Ph.D. Students as reflected in the approved Annual Report/Convocation Report to be provided in the prescribed format.***

4. Outreach and Inclusivity (OI): 100 marks

- **Ranking weight: 0.10**
- **Overall Assessment Metric: $OI = RD(30) + WD(30) + ESCS(20) + PCS(20)$**
- **The component metrics are explained on following pages:**
 - A. Percentage of Students from other States/ Countries (Region Diversity): RD**
 - B. Percentage of Women (Women Diversity): WD**
 - C. Economically and Socially Challenged Students: ESCS**
 - D. Facilities for Physically Challenged Students: PCS**

A. Percentage of Students from other States/ Countries (Region Diversity RD): 30 marks

- **RD = 25 × fraction of total students enrolled from other states + 5 × fraction of students enrolled from other countries**
- ***Primary Data: To be provided in the prescribed format.***

B. Percentage of Women (Women Diversity WD): 30 marks

- $WD = 15 \times (N_{WS}/50) + 15 \times (N_{WF}/20)$
- N_{WS} are the percentage of Women students.
- N_{WF} are the percentage of Women Faculty including the women members in senior administrative positions, such as Heads of Departments, Deans or Institute Heads.
- Expectation: 50% women students and 20% women faculty.
- *Primary Data: To be provided in the prescribed format.*

C.Economically and Socially Challenged Students (ESCS) : 20 marks

- **ESCS = 20 × f(N_{esc})**
- N_{esc} is the percentage of UG students being provided full tuition fee reimbursement by the institution to pursue their degree programs.
- ***Primary Data: To be provided by the institution in the prescribed format.***

D. Facilities for Physically Challenged Students (PCS): 20 marks

- **PCS = 20 marks, if the Institute provides full facilities for physically challenged students, as outlined.**

Else, in proportion to facilities.

- Basis: Verifiable Responses to Questions.
- *Primary Data: To be provided in a prescribed format.*

5. Perception (PR) – 100 marks

- **Ranking weight: 0.1**
- **Overall Assessment Metric: PR = 100**
- **Component metrics are explained in the following pages:**
 - A. Peer Perception: Employers & Academic Peers: (PR)**

A. Peer Perception: Employers & Academic Peer (PR) : 100 marks

- This is to be done through a survey conducted over a large category of Employers, Professionals from Reputed Organizations and a large category of academics to ascertain their preference for graduates of different institutions.
- Comprehensive list will be prepared taking into account various sectors, regions, etc.
- Lists to be updated periodically.