INDIA RANKINGS 2021

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- 2021
(Engineering)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Parameter</th>
<th>Marks</th>
<th>Weightage</th>
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<tr>
<td>1</td>
<td>Teaching, Learning &amp; Resources</td>
<td>100</td>
<td>0.30</td>
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<tr>
<td>2</td>
<td>Research and Professional Practice</td>
<td>100</td>
<td>0.30</td>
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<td>3</td>
<td>Graduation Outcomes</td>
<td>100</td>
<td>0.20</td>
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<td>4</td>
<td>Outreach and Inclusivity</td>
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<td>0.10</td>
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<td>5</td>
<td>Perception</td>
<td>100</td>
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<td>Parameters</td>
<td>Ranking weight: 0.30</td>
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<td>1.</td>
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<td><strong>Ranking weight</strong>: 0.30</td>
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<tr>
<td>A.</td>
<td>Student Strength including Doctoral Students (SS): 20 marks</td>
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<tr>
<td>B.</td>
<td>Faculty-student ratio with emphasis on permanent faculty (FSR): 30 marks</td>
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<td>C.</td>
<td>Combined metric for Faculty with PhD (or equivalent) and Experience (FQE): 20 marks</td>
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<td>D.</td>
<td>Financial Resources and their Utilisation (FRU): 30 marks</td>
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<td>Research and Professional Practice (RP)</td>
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<td>Combined metric for Publications (PU): 35 marks</td>
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<td>B.</td>
<td>Combined metric for Quality of Publications (QP): 40 marks</td>
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<td>C.</td>
<td>IPR and Patents: Published and Granted (IPR): 15 marks</td>
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<td>D.</td>
<td>Footprint of Projects and Professional Practice (FPPP): 10 marks</td>
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<td>Median Salary (GMS): 25 marks</td>
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<td>Metric for Number of Ph.D. Students Graduated (GPHD): 20 marks</td>
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<td>B.</td>
<td>Percentage of Women (Women Diversity WD): 30 marks</td>
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<td>D.</td>
<td>Facilities for Physically Challenged Students (PCS): 20 marks</td>
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<tr>
<td>5.</td>
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<tr>
<td>A.</td>
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</table>
1. Teaching, Learning & Resources (TLR): 100 marks

- Ranking weight: 0.30
- Overall Assessment Metric:
  \[ TLR = SS \ (20) + FSR \ (30) + FQE \ (20) + FRU \ (30) \]
- 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) × 15 + f(N_p) × 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 2019-20.
- 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

- \( FQ = 10 \times (\frac{F_{RA}}{95}), \quad F_{RA} < 95\%; \)
- \( FQ = 10, \quad F_{RA} \geq 95\%. \)

- 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:

\[ \text{RP} = \text{PU}(35) + \text{QP}(40) + \text{IPR}(15) + \text{FPPP}(10) \]

- 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 × 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

- \[ QP = 20 \times f\left(CC/F_{RQ}\right) + 20 \times f\left(TOP25P/P\right) \]

- 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× f (PG)**

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

  **IPP = 5 × 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

- \[ \text{FPPP} = \text{FPR} + \text{FPC} \]
- \[ \text{FPR} = 7.5 \times f(\text{RF}) \]
  - RF is average annual research funding earnings (amount actually received in rupees) per faculty at institute level in previous three years.
- \[ \text{FPC} = 2.5 \times f(\text{CF}) \]
  - 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:

  \[ GO = \text{GPH}(40) + \text{GUE}(15) + \text{GMS}(25) + \text{GPHD}(20) \]

- 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

- $GPH = 40 \times (\frac{N_p}{100} + \frac{N_{hs}}{100})$

- $N_p$ = 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 × min [(Nₙ/80), 1]

- Nₙ 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

• \( GMS = 25 \times f(MS) \)

• \( MS = \text{Median salary of graduates (in UG/PG program) in the previous three years from an institution.} \)

• *Primary Data: To be provided in the prescribed format.*
D. Metric for Number of Ph.D Students Graduated (GPHD): 20 Marks

- \( \text{GPHD} = 20 \times f(N_{\text{phd}}) \)

- \( N_{\text{phd}} = \text{Average number of Ph.D students graduated (awarded Ph.D) over the previous three years.} \)

- *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

• $RD = 25 \times \text{fraction of total students enrolled from other states} + 5 \times \text{fraction of students enrolled from other countries}$

• *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 = $20 \times f(N_{esc})$

- $N_{esc}$ 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 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.