INDIA RANKINGS 2019

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- 2019

(Engineering)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Parameter</th>
<th>Marks</th>
<th>Weightage</th>
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<td>1</td>
<td>Teaching, Learning &amp; Resources</td>
<td>100</td>
<td>0.30</td>
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<td>2</td>
<td>Research and Professional Practice</td>
<td>100</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>A. Student Strength including Doctoral Students (SS): 20 marks</td>
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<td>B. Faculty-student ratio with emphasis on permanent faculty (FSR): 30 marks</td>
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<td>C. Combined metric for Faculty with PhD (or equivalent) and Experience (FQE): 20 marks</td>
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<td>D. Financial Resources and their Utilisation (FRU): 30 marks</td>
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<td>B. Combined metric for Quality of Publications (QP): 40 marks</td>
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<td>C. IPR and Patents: Published and Granted (IPR): 15 marks</td>
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<td>D. Footprint of Projects and Professional Practice (FPPP): 10 marks</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

- \( \text{FSR} = 30 \times [15 \times (F/N)] \)
- \( N = N_T + N_p \)
- \( F \): Full time regular faculty in the institution in the previous year.
- Regular appointment means Faculty on Full time basis. \textit{Faculty on contract basis/ad-hoc basis will be considered if the concerned faculty has taught in both the semesters of academic year 2017-18.}
- 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.

- \textit{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

- \( F_Q = 10 \times \left(\frac{F_{RA}}{95}\right) \), \( F_{RA} < 95\% \);
- \( F_Q = 10, F_{RA} \geq 95\% \).

- 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.

\( F_1 = \text{Fraction with Experience up to 8 years}; \)
\( F_2 = \text{Fraction with Experience between 8+ to 15 years}; \)
\( F_3 = \text{Fraction with Experience > 15 years}. \)

- \( F_E = 3\min(3F_1, 1) + 3\min(3F_2, 1) + 4\min(3F_3, 1) \)
  
  Rationale: Full marks for a ratio of 1:1:1

- \( FQE = F_Q + F_E \)

- \textit{Primary Data: Faculty List in the Prescribed Format.}
D: Financial Resources and their Utilisation (FRU): 30 Marks

- **FRU = 7.5\times f(BC) + 22.5\times 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

- \( \text{QP} = 20 \times f(\text{CC}/\text{F}_{RQ}) + 20 \times f(\text{TOP25P}/P) \)

- 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.
- \( \text{F}_{RQ} \) is the maximun 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:

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

- 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

- \( \text{GPH} = 40 \times (\frac{\text{Np}}{100} + \frac{\text{Nhs}}{100}) \)

- \( \text{Np} = \) Percentage of graduating students (in UG/PG programs) placed in the previous three years.
- \( \text{Nhs} = \) 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

- \( \text{GUE} = 15 \times \min \left( \frac{N_g}{80}, 1 \right) \)

- \( N_g \) 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

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

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

- **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: \( \text{OI} = \text{RD}(30) + \text{WD}(30) + \text{ESCS}(20) + \text{PCS}(20) \)
- 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

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

• *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

- \( \text{ESCS} = 20 \times f(N_{esc}) \)

- \( N_{esc} \) 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 Peers (PR): 100 marks
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.