Quantification of R & D Resources in Higher Education in India.

सत्यमेव जयते

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Preface

Even though India has largest number of Higher Educational Organizations in the world but drive to eradicate illiteracy in rural mass and to take a high jump in technical advances, has been very clear government policy in recent years. For all-round integral development of any country, deeply knowledgeable scientists and technocrats along with esteemed business entrepreneurs and learned personals fully grasping and practicing traditional Indian culture are essential components of the vast human resources of this country.

Keeping this in mind, it seems that Ministry of Human Resources Development (MHRD) decided to conduct an yearly online survey of higher education from 2010-11. To assess the status and growth of educational advancement, an yearly database (AISHE) is also being maintained covering whole of the Indian nation.

Very kindly DST arranged to introduce me the structure of the said database with the help of MHRD Officers-Incharge, of the AISHE. NSTMIS officials explained me their requirements and motivated me to undertake this project. It was my proud privilege to take up this challenge.

This work is an attempt to estimate the total manpower engaged in Research & Development (R & D) in Science and Technology (S&T), Full Time Engagement (FTE) in R & D in S&T, to estimate the total expenditure on R & D activities (ERD) and FTE equivalent Salary expenditure on R & D activities in S&T (SERD), in whole of India.

DST has undertaken in past many similar studies, but on regional basis, not for the whole country. Hence, through this report, I have tried my best to complete this huge task and hope that the findings will reach upto mark of usefulness.

After presentation of Project work, which was with only first three objectives, the fourth was also included by a short cut method using UGC reports. The esteemed members also desired that as the 2015-16 data has also been uploaded, the work may be supplemented with the then available data, and by discipline and gender wise information too. This report tries to summarize the evaluated information in the form of tables and graphs including the desired additions too using the needed data exclusively from the now five years' AISHE database. Multiple methods/formulas are also innovated for bringing out the desired solution.

It is hoped that the findings of this project work will add to the pool of important information, not only for Educationists, Academicians and Researchers but also for the improved Database updates of the MHRD AISHE portal in future.

Pointers and suggestions by e-mail to any flaws and lacunae in this report will be highly appreciated.

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Abbreviations

AICTE	All India Council of Technology Education
AIIMS	All India Institute of Medical Sciences
AISHE	All India Survey of Higher Education
AMU	Aligarh Muslim University
BHU	Banaras Hindu University
DA	Dearness Allowance
DCF	Data Collection Format
DST	Department of Science and Technology
FTE	Full Time Engagement
Gr.	Group
GP	Grade Pay
HEO	Higher Educational Organization
ID	Identification number of different HEO's
IGNOU	Indira Gandhi National Open University
IIM	Indian Institute of Management
IISc	Indian Institute of Sciences
IIT	Indian Institute of Technology
ISI	Indian Statistical Institute
ISSR	Indian Society of Social Science Research
JIPMER	Jawaharlal Institute of Postgraduate Medical Education and Research
LTC	Leave Travel Concession
MHRD	Ministry of Human Resource Development
NA	Not Available

N_{AS}	Number of Assistant professors/ Lecturers in S&T Disciplines
N_{AP}	Number of Associate Professors/ Readers/ Lecturers (senior Grade/Selection Grade) in S&T Disciplines
N_{PR}	Number of Professors and their Equivalent in S&T
NIFT	National Institute of Fashion Technology
NIT	National Institute of Technology
NTS	Non-Teaching Staff
OBC	Other Backward Caste
PGIMER	Post Graduate Institute of Medical Education and Research
R & D	Research and Development
S_D	Total enrolments for each of the 92 disciplines(D)
S & T	Science and Technology
SC	Schedule Caste
SGPGI	Sanjay Gandhi Post Graduate Institute
ST	Schedule Tribes
TEQIP	Technical Education Quality Improvement Program
TS	Teaching Staff
UGC	University Grant Commission

Symbols, Definitions And / Or Expressions

1.	**N^k**	Number of HEO's in year k ; k = 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16
2.	$\sum_{k=1}^{r} y_k$	Sum of y_k for k = 1,2,...,r **= $y_1 + y_2 + y_3 + \ldots + y_r$**
3.	**ERD**	Expenses on R&D activities in Higher Education in S&T Disciplines. **= ERDT + ERDS + ENTS**
4.	**ERDT**	Expenses on R&D Activities of Teachers in S&T Disciplines **= ERDT (1) + ERDT (2)**
5.	**ERDS**	Expenses on Higher Education of Students in S&T Disciplines **= ERDS (1) + ERDS (2)**
6.	**ENTS**	Total salary of Non-teaching Staff (NTS) in S&T disciplines **= P_{NTS} × Total Salary**
7.	**ERDT (1)**	Expenses on Teachers in S&T Disciplines on their salary **= P_{ST} × Salary**
8.	**ERDT(2)**	Expenses by Teachers in S&T Disciplines on equipments, laboratory and it's maintenance, material forLab. and library, contingency, visiting faculty and seminars / symposia / conferences. . *It can not be calculated individually because thisexpenditure is neither given separately for teachers and students nor disciplines wise.*
9.	**ERDS(1)**	Expenses on Higher Education of Students in S&T Disciplines on scholarship **= P_{SS} × Scholarship**
10.	**ERDS(2)**	Expenses by Students in S&T Disciplines on equipments, laboratory and it's maintenance, material for Lab. and

library, contingency, participation in seminars/symposia/ conferences.

It can not be calculated individually because the expenditure in Block 1G of AISHE is neither givenseparately for teachers and students nor disciplines wise.

So,

ERDT(2) + ERDS(2) calculated together is

= P_{NTS} × (LILB+RACT)

11. P_{ST} The proportion of the S&T teachers among all the teachers in HEO's $= \frac{N_{ST}}{T}$

12. T Total number of teachers in HEO'S.

13. N_{ST} Number of S&T teachers in HEO's.

14. Salary The total money paid by an HEO to all its employees (Given in Block 1Gof AISHE).

15. P_{SS} Proportion of S&T students to all the students in HEO's.

= $\frac{S_{ST}}{S}$

16. S Total number of students in HEO.

17. S_{ST} Number of S&T students in HEO's.

18. S_{RES} Number of Ph.D. and/or higher level Students in S&T Discipline in HEO's.

19. Scholarship The total scholarship paid by an HEO to all its students (Given in Block 1G of AISHE).

20. P_{NTS} Estimated proportion of S&T teachers and students in every HEO

= (N_{ST}+S_{ST}) / (T+S)

21. LILB Library and Laboratories expenses in HEO (Given in Block 1G of AISHE).

22. RACT Research activity expenses in HEO (Given in Block 1G of AISHE).

23. $ERDT_j(1)$ Expenses on Teachers in S&T Disciplines on salary in j^{th} HEO of i^{th} type of HEO.

$= P_{ST_j} \times Salary_j = A_j$; **j =** 1, 2, 3,...,$n_i$ **and** **i**= 1, 2,...11

24. n_i The number of different HEO's in i^{th}type of HEO's.

25. $ERDT_i(1)$ Total expenses on S&T teachers on salary in i^{th} type of HEO.

$= \sum_{j=1}^{ni} ERDT_j(1) = \sum_{j=1}^{ni} P_{STj} \times Salary_j$

$= \sum_{j=1}^{ni} A_j$

26. P_{STj} The proportion of the S&T teachers among all the teachers in j^{th}HEO of i^{th} type of HEO.

$= \frac{N_{ST_j}}{T_j}$

27. T_j Number of total teachersin j^{th}HEO of i^{th} type of HEO.

28. N_{ST_j} Number of S&T teachersin j^{th}HEO of i^{th} type of HEO.

29. N_{AS_j} Number of Assistant Professor in S&T Disciplines in j^{th}HEO of i^{th} type of HEO's.

30. $Salary_j$ The total salary paid to all its employees in j^{th}HEO of i^{th} type of HEO. (Given in Block 1G of AISHE)

31. $ERDS_j(1)$ Expenses on S&T students on scholarship in j^{th}HEO of i^{th} type of HEO.

$= P_{SSj} \times Scholarship_j = B_j$

32. $ERDS_i$ (1) Total scholarship paid in i^{th} type of HEO to all its S&T students

$= \sum_{j=1}^{ni} ERDS_j(1) = \sum_{j=1}^{ni} P_{SSj} \times Scholarship_j = \sum_{j=1}^{ni} B_j$

33. P_{SSj} Proportion of S&T students in j^{th}HEO of i^{th} type of HEO.

$= \frac{S_{ST_j}}{S_j}$

34. S_j Total number of students in j^{th}HEO of i^{th} type of HEO.

35. S_{STj} Number of S&T studentsin j^{th}HEO of i^{th} type of HEO.

36. S_{RES_j} Number of Ph.D. and/or higher level Students in S&T Disciplines in j^{th} HEO of i^{th} type of HEO.

37. Scholarship$_j$ The total scholarship paid to all its students in j^{th}HEO of i^{th} type of HEO (Given in Block 1G of AISHE).

38.ERDT$_j$ (2) +ERDS$_j$ (2) Expenses on R&D Activities by S&T teachers and S&T students on equipments, laboratory, and it's maintenance, material for Lab., contingency,visiting faculty and seminars /symposia/conferences in j^{th}HEO of i^{th}type of HEO.

= P_{NTSj} × (LILB$_j$+RACT$_j$) = C_j

39.P_{NTSj} Estimated proportion of S&T teachers and students in j^{th} HEO of i^{th} type of HEO.

= (N_{STj}+S_{STj}) / (T_j+S_j)

40.LILB$_j$ Library and Laboratories expenses in j^{th} HEO of i^{th} type of HEO (Given in Block 1G of AISHE).

41.RACT$_j$ Research activity expenses in j^{th} HEO of i^{th} type of HEO (Given in Block 1G of AISHE).

42.ERDT$_i$ (2) +ERDS$_i$ (2) Total expenses on R&D Activities by teachers and students both in S&T Disciplines on equipments, laboratory, and maintenance, material for Lab., visiting faculty, seminars / symposia / conferences and contingency in i^{th} type of HEO.

= $\sum_{j=1}^{ni}$ [P_{NTSj} × (LILB$_j$+RACT$_j$)]

= $\sum_{j=1}^{ni}$ C_j

43.ENTS$_j$ Total salary of NTS in S&T disciplinesin jthHEO of ithtype of HEO.

$= P_{NTSj} \times Salary_j = D_j$

44.ENTS$_i$ Total salary of NTS in S&T disciplinesinith type of HEO.

$= \sum_{j=1}^{ni} P_{NTSj} \times Salary_j$

$= \sum_{j=1}^{ni} D_j$

45.ERD$_i$ Expenses on R&D in S&T Disciplines of ith type of HEO's

$= \sum_{j=1}^{ni} [ERDT_j + ERDS_j + ENTS_j]$

$= \sum_{j=1}^{ni} [ERDT_j (1) + ERDT_j (2) + ERDSj(1) + ERDSj (2) + ENTSj]$

$= \sum_{j=1}^{ni} [A_j + B_j + C_j + D_j]$

46.MPFT Man power (or head counts)engaged in S&T disciplines

= MPFT (T) + MPFT(S)

47.MPFT (T) The head counts of all the Teachers engaged in S&T disciplines.

48.MPFT (S) Should be total number of all the Research Students + Total number of Research Fellows, JRF's, SRF's, RA's in S&T disciplines;
But due to non-availability of all the above, included only PG and above students in S&T disciplines.

49.MPFT$_i$ The total head counts of teachers and students engaged in R&D activities in S&T disciplines in ith type of HEO

$= \sum_{j=1}^{ni} [MPFT_j(T) + MPFT_j(S)]$

$= \sum_{j=1}^{ni} [N_{STj} + S_{STj}]$;

50. $\mathbf{T_{STsal}}$ Salary of S&T Teachers

= P_{ST} × Salary

51. $\mathbf{FTE_i}$ Full Time Engagement in R&D activities in S&T Disciplines of i^{th}Tye of HEO

= $\sum_{j=1}^{n_i} FTE_{ij}$

52.FTE (T) Full time engagement of teachers in R&D activities in S&T disciplines

53.FTE (S) Full time engagement of students in R&D activities in S&T disciplines

54. $\mathbf{FTE_{ij}}$ Full Time Engagement in R&D activities in S&T Disciplines in j^{th}University in i^{th} type of HEO's

=S_{RES_j} + 0.35 × N_{ST_j} - 0.10 × N_{AS_j}

55. $\mathbf{(RACT)_k}$ The Expenses on Research Activities in k^{th} year;

k = 2011-12, 2012-13, 2013-14,2014-15 and 2015-16

56.Category 1 Teachers at the post of Professor.

57.Category 2 Teachers at the post of Associate Professor.

58.Category 3 Teachers at the post of Assistant Professor.

59. $\mathbf{T_{sal}}$ Salary of all the Teachers $= N_1 * \overline{S_1} + N_2 * \overline{S_2} + N_3 * \overline{S_3}$

60. $\mathbf{N_l}$ Total number of Teachers of Category l ; l = 1,2,3

61. $\overline{\mathbf{S_m}}$ = Average salary computed for Category m ; m = 1,2,3

= P_m + (115% of P_m= DA)

62. $\overline{S_1}$ = Rs.133730.00

63. $\overline{S_2}$ =Rs.131580.00

64. $\overline{S_3}$ =Rs.71700.00

65. $\mathbf{P_m}$ Average pay band for category m + average GP of category m

66. T^*_{STsal} Salary to S&T teaching staff using Pay band and GP

$= P_{ST} \times T_{sal}$

67.SERD The FTE equivalent Salary expenditure on R&D activities in S&T disciplines

$= [P_{Ss} \times Schol \times Sres + (N_{PR}\overline{S_1} + N_{AP}\overline{S_2}) \times \frac{14}{40} + N_{AS}\overline{S_3} \times \frac{10}{40}] \times 12$

68.P Percentage of Students enrolments in Disciplines

$= (S_D/\sum_D S_D) * 100 = (S_D/S_{ST}) * 100$

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In Sub Folder-1 Data File1: Student Teacher Data with Id No. and Name of HEO's Type, Disciplines and gender wise for all five study Years.

In Sub Folder-2 Data File2: Finance Data (4 items- Salary, LILB, Scholarship, RACT) For all Type for all five study years**.**

In Sub Folder-3 Result File: For all 11 Types of HEOS'

1- Manpower, Research Manpower Type Year and Gender wise FTE, SERD for all five study years.

2- ERD for all five study years.

In Sub Folder-4 Whole FTR (Text + Graph + Table)

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First of all, I express my deep gratitude to NSTMIS Division of Department of Science & Technology (DST), New Delhi for opting me to carry out this important study. Hearty thanks for all the support, financial, through their Department and technical, from the start to the end, by the NSTMIS Division officers.

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Careful continuous monitoring the progress of project work, prompt answers to our time to time queries by Dr. A.N. Rai, Director NSTMIS Division, and all the critical comments of the Project Advisory Committee, on the first Draft Report enabled us to complete the first draft report, I believe, in a more adequate form.

High applauds are given for the valuable comments and suggestions provided by the honorable members, on the presentation held on 21st October 2016. It had enabled us to provide some more correct estimates of FTE Equivalent Salary expenditure on R&D Activities in S&T disciplines using some information from the UGC reports, in a very short extra time.

I also wish to recognize the lenient expert advice to add up the work by supplementing it with adding the 2015-16 uploaded data report and discipline and gender wise estimates also.

I wish to place my thanks to the investigating team of this project for their active, dedicated, laborious and untiring computer work, from the beginning to the end. Without the equally un-tiring, continuous and dedicated contribution of the four helping hands, it would not have been possible to complete the project in time. It resulted in enabling me present at least the partly completed portion of the project work in June '18 LPAC. I have high appreciation for them along with their efforts aided by some efficient associates requested to provide their valuable time

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Executive Summary

This project basically intends to provide the total financial inputs on R&D Activities, the total manpower, full time engagement (FTE) in R&D activities in S&T disciplines, expenditure on R&D activities in S&T disciplines(ERD), FTE equivalent Salary expenditure in R&D activities in S&T disciplines(SERD) in Higher Education Sector of the country during the 5 years' time period 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16 from the database of All India Survey on Higher Education (AISHE) carried out by Ministry of Human Resource Development (MHRD).

The study covers all the Universities/Institutions within Indian boundary, given in Table 1. As this study is only on S&T, the HEO's with such disciplines were identified and Table 2 below gives the Type and Year wise numbers of such HEO's.

Table 1: Year –wise and Type-wise Number of Universities/ Institutions

↓University Type	Total Number- Year wise				
	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
1. Central University	42	42	42	43	43
2. Central Open University	1	1	1	1	1
3. Deemed University-Private	79	80	80	79	79
4. Deemed University-Government	38	36	36	36	32
5. Deemed University-Government Aided	11	11	11	11	11
6. Institute under State Legislature Act	5	5	5	5	5
7. State Public University	286	292	309	316	329
8. State Private University	105	122	149	181	197
9. State Open University	13	13	13	13	13
10. Institute of National Importance	59	62	68	68	74
11. Others	3	3	3	5	13
12. State Private Open University	0	0	0	1	1
TOTAL	**642**	**667**	**717**	**759**	**798**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16).

Note: Type 12 (State Private Open University) has no S&T Discipline

Table 2: Total Number of Higher Education Organization (HEO's) with S&T Disciplines by their Types and Years

S.NO.	University Type ↓	2011-12	2012-13	2013-14	2014-15	2015-16
1	Central University	40	40	40	40	40
2	Central Open University	1	1	1	1	1
3	Deemed University-Private	72	72	72	72	74
4	Deemed University-Government	31	31	31	31	33
5	Deemed University-Government Aided	11	11	11	10	10
6	Institute under State Legislature Act	4	4	4	4	5
7	State Public University	210	208	215	219	219
8	State Private University	72	108	110	138	173
9	State Open University	13	13	13	13	13
10	Institute of National Importance	59	62	68	68	68
11	Others	3	3	3	5	8
	Total	**516**	**553**	**568**	**601**	**644**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16).

0. Contents

The four measures: Estimated S&T Manpower, Estimated Research Manpower Estimated FTE, Estimated ERD and Estimated SERD are presented in Tables 3,3a, 4, 5 and 6. Table 7 contains the categories of disciplines according to the percentage of students' enrolment year-wise.

As desired by DST a summary of the tables 1 – 6 are presented in the required format in Tables 0.1 to 0.5 first, in this section.

Table 0.1: Manpower (Head Counts)

(In numbers)

Type of Universities	2011-12	2012-13	2013-14	2014-15	2015-16
1. Central	37954(40)	41854(40)	51743(40)	55911 (40)	53305(40)
2. Central Open	215(1)	260(1)	134(1)	142(1)	149(1)
3. Deemed Pvt.	103583(65)	114990(65)	113516 (65)	107268 (66)	93304 (67)
4. Deemed Govt.	17673(25)	20706(25)	19666 (25)	23644 (25)	24858 (25)
5. Deemed Govt. Aided	12315(11)	12104(11)	12155 (11)	12336 (10)	5209 (10)
6. Institute Under Legisture Act	1194(3)	1223(4)	1719 (4)	1707 (4)	1414 (4)
7. State Public	189444(209)	218887(208)	255987 (215)	263235 (219)	251305 (219)
8. State Pvt	41839(69)	72306(98)	77401 (106)	78396 (138)	64824 (143)
9. State 0pen	62(2)	59(2)	78(2)	65(2)	68(2)
10.Inst. of National Importance	53732(48)	73013(50)	85974 (50)	94081 (50)	103325 (62)
11. Others	596(2)	718(2)	267(2)	1436(3)	617(4)
Total	**458607(475)**	**556120(506)**	**618640(521)**	**638221(558)**	**598378(577)**

Source: Table 3 and Table 5.2

Table 0.1a: Research Manpower (Head Counts)

(In numbers)

Type of Universities	2011-12	2012-13	2013-14	2014-15	2015-16
10. Central	7024(40)	14568(40)	16282(40)	14880(40)	17782(40)
11. Central Open	215(1)	220(1)	412(1)	136(1)	130(1)
12. Deemed Pvt.	34297(65)	41567 (65)	39138(65)	35129(66)	40686 (67)
13. Deemed Govt.	8375(25)	9885(25)	9352(25)	11409(25)	12342(25)
14. Deemed Govt. Aided	2609(11)	3449(11)	3506(11)	3971(10)	5322(10)
15. Institute Under Legisture Act	406(3)	707(4)	932(4)	858(4)	962 (4)
16. State Public	32622(209)	45175(208)	48256 (215)	54989 (219)	26900 (219)
17. State Pvt	12563(69)	21515(98)	24484(106)	29445(138)	28386(143)
18. State 0pen	55(2)	59(2)	78(2)	63(2)	68(2)
10.Inst. of National Importance	18537(48)	26900(50)	33615(50)	36144(50)	41915(62)
12. Others	59(2)	77(2)	114(2)	153(3)	210(4)
Total	**118702(475)**	**152069(506)**	**172810(521)**	**180439(558)**	**202792(577)**

Source: Table 3a and Table 5.2a

Table 0.2: Full Time Equivalent (FTE) R&D Manpower

(Hours/week)

Type of Universities	2011-12	2012-13	2013-14	2014-15	2015-16
1. Central	4840.35(40)	8756.35(40)	11156.45 (40)	9542.05 (40)	12506.80(40)
2. Central Open	141.35(1)	159.65(1)	53.15(1)	61.85(1)	40.50(1)
3. Deemed Pvt.	15211.65 (65)	18894.20 (65)	19200.00 (65)	17845.75 (66)	19804.05 (67)
4. Deemed					

Govt.	5996.95 (25)	7139.55(25)	6665.95(25)	8671.35(25)	9739.30 (25)
5. Deemed Govt. Aided	1586.65 (11)	2018.40 (11)	2081.40(11)	2486.05 (10)	3449.55 (10)
6. Inst Under Legis Act	175.85 (3)	277.60 (4)	473.35 (4)	484.90 (4)	492.85 (4)
7. State Public	23654.55 (209)	22032.90 (208)	27246.75 (215)	29811.45 (219)	34902.90 (219)
8. State Pvt	4616.00 (69)	7669.15 (98)	9263.03 (106)	11011.30 (138)	10076.50 (143)
9. State 0pen	31.00(2)	34.25(2)	41.45(2)	30.75(2)	41.00(2)
10.Inst. of National Importance	12925.50 (48)	18644.60 (50)	25318.85 (50)	28089.25 (50)	33526.25 (62)
11. Others	22.85(2)	32.55(2)	55.90(2)	85.35(3)	122.00(4)
Combined Total	**69205.35 (475)**	**90690.75 (506)**	**102485.58 (521)**	**108162.08 (558)**	**109885.70 (577)**

Source: Table 4 and Table 5.3

Table 0.3: Gross R&D Expenditure on Higher Studies (ERD)

(Rs. Crores)

Type of Universities	2011-12	2012-13	2013-14	2014-15	2015-16
1. Central	1283.15	1774.54	4175.53	3569.14	2672.18
2. Central Open	88.12	68.56	89.90	81.57	83.71
3. Deemed Pvt.	5908.20	3002.90	5872.62	3683.95	4497.27
4. Deemed Govt.	13780.42	22267.17	21259.82	25146.63	32866.33
5. Deemed Govt. Aided	207.57	264.22	202.42	187.13	141.43
6. Inst Under Legis Act	948.78	304.02	671.24	843.49	501.53
7. State Public	39305.14	36602.53	72755.98	58549.33	41337.21
8. State Pvt	43343.39	10637.50	8089.31	8349.82	3037.34
9. State 0pen	5.92	6.97	11.93	25.04	25.49
10.Inst. of National Importance	4141.65	4770.72	6640.72	9584.74	5983.77
11.Others	10.50	12.41	12.34	5.46	16.06
Total	**109022.84**	**79711.54**	**119781.81**	**110026.30**	**91162.32**

Source: Table 5 and Table 5.4

Table 0.4: FTE Equivalent R&D Expenditure on Higher Studies (SERD)

(In Rs. Crores or Rs. 10 ^{7})

Type of Universities	2011-12	2012-13	2013-14	2014-15	2015-16
1. Central	247.028(40)	287.610(40)	332.352(40)	373.902(40)	413.411(40)
2. Central Open	4.207(1)	4.340(1)	5.038(1)	5.417(1)	5.533(1)
3. Deemed Pvt.	900.714(65)	1051.870(65)	1059.668(65)	1306.485(66)	2210.430(67)
4. Deemed Govt.	118.840(25)	428.502(25)	1086.630(25)	1286.911(25)	2139.182(25)
5. Deemed Govt. Aided	53.766(11)	64.830(11)	71.478(11)	75.567(10)	89.364(10)
6. Inst Under Legis Act	21.006(3)	26.660(4)	27.020(4)	32.065(4)	33.400(4)
7. State Public	393.600(209)	1034.401(208)	1097.991(215)	1260.331(219)	1272.503(219)
8. State Pvt	313.715(69)	637.253(98)	678.550(106)	735.663(138)	739.076(143)
9. State 0pen	0.700(2)	0.728(2)	0.902(2)	1.044(2)	1.170(2)
10.Inst. of National Importance	1782.004(48)	1913.493(50)	3631.300(50)	4914.503(50)	5226.097(62)
11.Others	1.814(2)	2.316(2)	2.433(2)	2.721(3)	3.267(4)
Total	**3837.394**	**5452.053**	**7993.592**	**9994.609**	**12138.000**

Source: Table 5 and Table 5.5a

Table 0.5: Tables for All Types of Universities

1.Central University	2011-12	2012-13	2013-14	2014-15	2015-16	Source
No. of Universities	42	42	42	43	43	Table 1 and Table 1.2
No. of Universities with S& T Disciplines	40	40	40	40	40	Table 2 and Table 1.2(a)
R&D Manpower(HC)	37954	41854	51743	55911	53305	Table 3 and Table 5.2
Research Manpower(HC)	7024(40)	141568(40)	16282(40)	14880(40)	17782(40)	Table 3a and Table 5.2a
R&D						Table 4

Manpower(FTE)	4840.35(40)	8756.35(40)	11156.45 (40)	9542.05 (40)	12506.80(40)	and Table 5.3
R&D Expenditure(ERD)	1283.15	1774.54	4175.53	3569.14	2672.18	Table 5 and Table 5.4
FTE Equivalent R&D Expenditure(SERD)	247.028(40)	287.610(40)	332.352(40)	373.902(40)	413.411(40)	Table 6 and Table 5.5

2. Central Open University	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**Source**
No. of Universities	1	1	1	1	1	Table 1 and Table 1.2
No. of Universities with S& T Disciplines	1	1	1	1	1	Table 2 and Table 1.2(a)
R&D Manpower(HC)	215	260	134	142	149	Table 3 and Table 5.2
Research ManPower(HC)	215(1)	220(1)	134(1)	134(1)	130(1)	Table 3a and Table 5.2a
R&D Manpower(FTE)	141.35(1)	159.65(1)	53.15(1)	61.85(1)	40.50(1)	Table 4 and Table 5.3
R&D Expenditure(ERD)	88.12	68.56	89.90	81.57	83.71	Table 5 and Table 5.4
FTE Equivalent R&D Expenditure(SERD)	4.207(1)	4.340(1)	5.038(1)	5.417(1)	5.533(1)	Table 6 and Table 5.5

3. Deemed Univ. Pvt	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**Source**
No. of Universities	79	80	80	79	79	Table 1 and Table 1.2
No. of Universities with S& T Disciplines	72	72	72	72	74	Table 2 and Table 1.2(a)
R&D	103583	114990	113516	107268	93304	Table 3 and

Manpower(HC)						Table 5.2
Research Manpower(HC)	34297(65)	41567(65)	39138 (65)	35129 (66)	40686 (67)	Table 3a and Table 5.2a
R&D Manpower(FTE)	15211.65 (65)	18894.20 (65)	19200.00 (65)	17845.75 (66)	19804.05 (67)	Table 4 and Table 5.3
R&D Expenditure(ERD)	5908.20	3002.90	5872.62	3683.95	4497.27	Table 5 and Table 5.4
FTE Equivalent R&D Expenditure(SERD)	900.714(65)	1051.870(65)	1059.668(65)	1306.485(66)	2210.430(67)	Table 6 and Table 5.5

4. Deemed Univ. Govt.	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**Source**
No. of Universities	38	36	36	36	32	Table 1 and Table 1.2
No. of Universities with S& T Disciplines	31	31	31	31	33	Table 2 and Table 1.2(a)
R&D Manpower(HC)	17673	20706	19666	23644	24858	Table 3 and Table 5.2
Research Manpower(HC)	8375(25)	10385(25)	9352 (25)	11409 (25)	12342 (25)	Table 3a and Table 5.2a
R&D Manpower(FTE)	5996.95 (25)	7139.55 (25)	6665.95 (25)	8671.35(25)	9739.30 (25)	Table 4 and Table 5.3
R&D Expenditure(ERD)	13780.42	22267.17	21259.82	25146.63	32866.33	Table 5 and Table 5.4
FTE Equivalent R&D Expenditure(SERD)	118.840(25)	428.502(25)	1086.630(25)	1286.911(25)	2139.182(25)	Table 6 and Table 5.5

5. Deemed Univ. Govt. Aided	2011-12	2012-13	2013-14	2014-15	2015-16	Source
No. of Universities	11	11	11	11	11	Table 1 and Table 1.2
No. of Universities with S& T Disciplines	11	11	11	10	10	Table 2 and Table 1.2(a)
R&D Manpower(HC)	*12315*	12104	12155	12336	5209	Table 3 and Table 5.2
Research Manpower(HC)	2609(11)	3449(11)	3506(11)	3971(10)	5322 (10)	Table 3a and Table 5.2a
R&D Manpower(FTE)	1586.65 (11)	2018.40 (11)	2081.40 (11)	2486.05 (10)	3449.55 (10)	Table 4 and Table 5.3
R&D Expenditure(ERD)	207.57	264.22	202.42	187.13	141.43	Table 5 and Table 5.4
FTE Equivalent R&D Expenditure(SERD)	53.766(11)	64.830(11)	71.478(11)	75.567(10)	89.364(10)	Table 6 and Table 5.5

6.Inst. under State Legislative Act	2011-12	2012-13	2013-14	2014-15	2015-16	Source
No. of Universities	5	5	5	5	5	Table 1 and Table 1.2
No. of Universities with S& T Disciplines	4	4	4	4	5	Table 2 and Table 1.2(a)
R&D Manpower(HC)	1194	1223	1719	1707	1414	Table 3 and Table 5.2
Research Manpower(HC)	406 (3)	707 (4)	932(4)	858(4)	962 (4)	Table 3a and Table 5.2a
R&D Manpower(FTE)	175.85	277.60	473.35	484.90	492.85	Table 4 and Table 5.3
R&D Expenditure(ERD)	948.78	304.02	671.24	843.49	501.53	Table 5 and Table 5.4

FTE Equivalent R&D Expenditure(SERD)	21.006(3)	26.660(4)	27.020(4)	32.065(4)	33.400(4)	Table 6 and Table 5.5

7.State Public Univ.	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**Source**
No. of Universities	286	292	309	316	329	Table 1 and Table 1.2
No. of Universities with S& T Disciplines	210	208	215	219	219	Table 2 and Table 1.2(a)
R&D Manpower(HC)	189444	218887	255987	263235	251305	Table 3 and Table 5.2
Research Manpower(HC)	34622(209)	32622(208)	45175 (215)	48256 (219)	54989(219)	Table 3a and Table 5.2a
R&D Manpower(FTE)	23654.55 (209)	22032.0 (208)	27246.75 (215)	29811.45 (219)	34902.90 (219)	Table 4 and Table 5.3
R&D Expenditure(ERD)	39305.14	36602.53	72755.98	58549.33	41337.21	Table 5 and Table 5.4
FTE Equivalent R&D Expenditure(SERD)	393.600(209)	1034.401(208)	1097.991(215)	1260.331(219)	1272.503(219)	Table 6 and Table 5.5

8. State Pvt. University	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**Source**
No. of Universities	105	122	149	181	197	Table 1 and Table 1.2
No. of Universities with S& T Disciplines	72	108	110	138	173	Table 2 and Table 1.2(a)
R&D Manpower(HC)	41839	72306	77401	78396	64824	Table 3 and Table 5.2
Research Manpower(HC)	55(2)	59(2)	78(2)	63(2)	68(2)	Table 3a and Table

						5.2a
R&D Manpower(FTE)	12563(69)	21515(98)	24484(106)	29442(138)	28386(143)	Table 4 and Table 5.3
R&D Expenditure(ERD)	43343.39	10637.50	8089.31	8349.82	3037.34	Table 5 and Table 5.4
FTE Equivalent R&D Expenditure(SERD)	313.715	637.253	598.105	735.663	739.076	Table 6 and Table 5.5

9. State Open University	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**Source**
No. of Universities	13	13	13	13	13	Table 1 and Table 1.2
No. of Universities with S& T Disciplines	13	13	13	13	13	Table 2 and Table 1.2(a)
R&D Manpower(HC)	62	59	78	65	68	Table 3 and Table 5.2
Research Manpower(HC)	55(2)	59(2)	78(2)	63(2)	68(2)	Table 3a and Table 5.2a
R&D Manpower(FTE)	31.00(2)	34.25(2)	41.45(2)	30.75(2)	41.00(2)	Table 4 and Table 5.3
R&D Expenditure(ERD)	5.92	6.97	11.93	25.04	25.49	Table 5 and Table 5.4
FTE Equivalent R&D Expenditure(SERD)	0.700(2)	0.728(2)	0.902(2)	1.044(2)	1.170(2)	Table 6 and Table 5.5

10.Inst. of National Importance	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**Source**
No. of Universities	59	62	68	68	74	Table 1 and Table 1.2
No. of Universities with S& T	59	62	68	68	68	Table 2 and

Disciplines						Table 1.2(a)
R&D Manpower(HC)	53732	73013	85974	94081	103325	Table 3 and Table 5.2
Research Manpower(HC)	18477(48)	26900(50)	33615(50)	36144(50)	41915(62)	Table 3a and Table 5.2a
R&D Manpower(FTE)	12925.50 (48)	18644.60 (50)	25318.85 (50)	28089.25 (50)	33526.25 (62)	Table 4 and Table 5.3
R&D Expenditure(ERD)	4141.65	4770.72	6640.72	9584.74	5983.77	Table 5 and Table 5.4
FTE Equivalent R&D Expenditure(SERD)	1782.004(48)	1913.493(5 0)	3631.300(5 0)	4914.503(5 0)	5226.097 (62)	Table 6 and Table 5.5

11.Others	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**Source**
No. of Universities	3	3	3	5	13	Table 1 and Table 1.2
No. of Universities with S& T Disciplines	3	3	3	5	8	Table 2 and Table 1.2(a)
R&D Manpower(HC)	596	718	267	1436	617	Table 3 and Table 5.2
Research Manpower(HC)	59(2)	77(2)	114(2)	153(3)	210(4)	Table 3a and Table 5.2a
R&D Manpower(FTE)	22.85(2)	32.55(2)	55.90(2)	85.35(3)	122.00(4)	Table 4 and Table 5.3
R&D Expenditure(ERD)	10.50	12.41	12.34	5.46	16.06	Table 5 and Table 5.4
FTE Equivalent R&D Expenditure(SERD)	1.814(2)	2.316(2)	2.433(2)	2.721(3)	3.267(4)	Table 6 and Table 5.5

1. Manpower (or Total Head Counts) in S&T Disciplines

(A) Manpower in R&D Activities in S&T Disciplines (MPFT) = Total Head counts of all the teachers engaged in S&T Disciplines + Total number of PG and above students in S&T disciplines.

Table 3 gives Type, Year and Gender wise Manpower for the five study years 2011-12 to 2015-16

Table 3: Estimated Manpower (Head Counts*) in S&T* Disciplines: Type, Year and Gender- Wise

		2011-12			2012-13		
S. No	**↓Type**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
1.	**Central Universities**	27942	10012	37954(40)	30408	11446	41854(40)
2.	**Central Open Universities**	155	60	215(1)	185	75	260(1)
3.	**Deemed Universities Private.**	72127	31456	103583(65)	80311	34679	114990(65)
4.	**Deemed Universities Govt.**	14293	3380	17673(25)	16509	4197	20706(25)
5.	**Deemed Universities Govt. Aided**	8379	3936	12315(11)	8370	3734	12104(11)
6.	**Inst.Under Legislature Act**	886	308	1194(3)	954	269	1223(4)
7.	**StatePublic University**	132439	57005	189444(209)	151769	67118	218887(208)

8.	**State Private University**	29936	11903	41839(69)	53167	19139	72306(98)
9.	**State Open University**	46	16	62(2)	44	15	59(2)
10.	**Inst. of National Importance**	44615	9117	53732(48)	60840	12173	73013(50)
11.	**Others**	448	148	596(2)	540	178	718(2)
	Combined Total	**331266**	**127341**	**458607(475)**	**403097**	**153023**	**556120(506)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011 12, 2012-13, 2013-14, 2014-15 and 2015-16).

Note1: Figures in ( ) are the number of S&T HEO's type and year wise, contributing to various Estimates

1. *Manpower in S&T disciplines includes: (i) Professors, Associate Professors and Assistant Professor of S&T disciplines.*
2. *(ii) Students of P.G. and Higher level in S&T disciplines.*

(iii) Computed from equations (2.1), (2.2) and (2.3) in Chapter 2.

Table 3 Contd.

		2013-14			**2014-15**		
S. No	**↓Type**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
1.	**Central Universities**	37404	14339	51743(40)	40248	15663	55911 (40)
2.	**Central Open Universities**	96	38	134(1)	100	42	142(1)
3.	**Deemed Universities Private**	79085	34431	113516 (65)	75202	32066	107268 (66)

4.	**Deemed Universities Govt.**	15846	3820	19666 (25)	18658	4986	23644 (25)
5.	**Deemed Universities Govt. Aided**	8407	3748	12155 (11)	8258	4078	12336 (10)
6.	**Inst. Under Legislature Act**	1325	394	1719 (4)	1336	371	1707 (4)
7.	**State Public University**	175076	80911	255987 (215)	179632	83603	263235 (219)
8.	**State Private University**	56887	20514	77401 (106)	56700	21696	78396 (138)
9.	**State Open University**	59	19	78(2)	45	20	65(2)
10.	**Inst. of National Importance**	70660	15314	85974 (50)	77250	16831	94081 (50)
11.	**Others**	183	84	267(2)	1045	391	1436(3)
	Combined Total	**445028**	**173612**	**618640(521)**	**458474**	**179747**	**638221(558)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16).

Note1: Figures in ( ) are the number of S&T HEO's type and year wise, contributing to various Estimates

2. Manpower in S&T disciplines includes:

(i) Professors, Associate Professors and Assistant Professor of S&T disciplines.

(ii) Students of P.G. and Higher level in S&T disciplines.

(iii) Computed from equations (2.1), (2.2) and (2.3) in Chapter 2.

Table 3.Contd.

		2015-16		
S. No	**↓Type**	**Male**	**Female**	**Total**
1.	**Central Universities**	38432	14873	53305(40)
2.	**Central Open Universities**	105	44	149(1)
3.	**Deemed Universities Pvt.**	64084	29220	93304 (67)
4.	**Deemed Universities Govt.**	19428	5430	24858 (25)
5.	**Deemed Universities Govt. Aided**	3613	1596	5209 (10)
6.	**Inst. Under Legislature Act**	1096	318	1414 (4)
7.	**State Public University**	166943	84362	251305 (219)
8.	**State Private University**	46890	17934	64824 (143)
9.	**State Open University**	41	27	68(2)
10.	**Inst. of National Importance**	84280	19045	103325 (62)
11.	**Others**	425	192	617(4)
	Combined Total	**425337**	**173041**	**598378(577)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16).

Note 1: Figures in ( ) are the number of S&T HEO's type and year wise, contributing to various Estimates

2: Manpower in S&T disciplines includes: (i) Professors, Associate Professors and Assistant Professor of S&T disciplines.

(ii) Students of P.G. and Higher level in S&T discipline Full Time Engagement (FTE) R&DActivities in S&T Disciplines
(iii) Computed from equations (2.1), (2.2) and (2.3) in Chapter 2.

(B) For calculating Full Time Engagement (FTE) and FTE Equivalent salary Expenditure in S&T Disciplines (SERD), the Research Manpower (= the numbers of three categories of teachers and the PhD and/or higher level students are required (see equations (2.5) and (2.29) in Chapter 2). So this required Research Manpower- Type, Year and Gender wise is given in Table 3a.

Table 3a : Estimated Research Manpower (*Head Counts) in S&T* Disciplines: Type, Year and Gender- Wise

2011-12 Research Manpower 2012-13 Research Manpower

(in Numbers)

S. no.	↓Type	Male	Female	Total	Male	Female	Total
1.	Central Universities	5546	1478	7024(40)	11247	3321	14568(40)
2.	Central Open Universities	155	60	215(1)	165	55	220(1)
3.	Deemed Universities Pvt.	24352	9945	34297(65)	29576	11991	41567(65)
4.	Deemed Universities Govt.	6806	1569	8375(25)	8370	2015	10385 (25)
5.	Deemed Universities Govt. Aided	1836	773	2609 (10)	2426	1023	3449 (10)
6.	Inst. Under Legislature Act	344	62	406 (3)	574	133	707 (4)
7.	State Public University	25740	8882	34622(209)	25095	7527	32622 (208)
8.	State Private University	9396	3167	12563 (69)	16201	5314	21515(98)
9.	State Open	41	14	55(2)	45	9	59(2)

	University						
10.	**Inst. of National Importance**	15318	3159	18477(48)	22256	4644	26900 (50)
11.	**Others**	41	18	59(2)	56	21	77(2)
	Combined Total	**89575**	**29127**	**118702(475)**	**116011**	**36058**	**152069(506)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16).

Note1 : Figures in ( ) are the number of S&T HEO's type and year wise, contributing to various Estimates

2 : Research Manpower in S&T disciplines includes: (i) Professors, Associate Professors and Assistant Professors of S&T disciplines.

(ii) Students of Ph.D. and Higher level in S&T disciplines. Contd.

Table 3a Contd.

2013-14 Research Manpower 2014-15 Research Manpower

(In numbers)

S. no.	↓Type	Male	Female	Total	Male	Female	Total
1.	**Central Universities**	12415	3867	16282(40)	11489	3391	14880(40)
2.	**Central Open Universities**	96	38	134(1)	100	34	134(1)
3.	**Deemed Universities Pvt.**	27992	11146	39138(65)	25391	9738	35129(66)
4.	**Deemed Universities Govt.**	7541	1811	9352 (25)	16509	2309	11409(25)
5.	**Deemed Universities Govt. Aided**	2436	1070	3506(10)	2694	1277	3971(11)
6.	**Inst. Under Legislature Act**	773	159	932(4)	730	128	858(4)
7.	**State Public University**	34260	10915	45175 (215)	36046	12210	48256(219)
8.	**State Private University**	18047	6437	24484(106)	22043	7399	29442 (138)
9.	**State Open University**	59	19	78(2)	43	19	63(2)

10.	**Inst. of National Importance**	27303	6312	33615(50)	29353	6791	36144(50)
11.	**Others**	85	29	114(2)	113	40	153(3)
	Combined Total	**131007**	**41803**	**172810(521)**	**137103**	**43336**	**180439(558)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16).

Note 1 : Figures in ( ) are the number of S&T HEO's type and year wise, contributing to various Estimates

2:Research Manpower in S&T disciplines includes: (i) Professors, Associate Professors and Assistant Professors of S&T disciplines.

(ii) Students of Ph.D. and Higher level in S&T disciplines.

Table 3a. Contd

2015-16 Research Manpower(In Numbers)

S. no.	↓Type	Male	Female	Total
1.	**Central Universities**	13650	4132	17782(40)
2.	**Central Open Universities**	92	38	130(1)
3.	**Deemed Universities Pvt.**	28055	2620	40686 (67)
4.	**Deemed Universities Govt.**	9722	2620	12342(24)
5.	**Deemed Universities Govt. Aided**	3275	2047	5322(11)
6.	**Inst. Under Legislature Act**	810	152	962(4)
7.	**State Public University**	39255	15734	54989(219)
8.	**State Private University**	21301	7085	28386(143)
9.	**State Open University**	41	27	68(2)
10.	**Inst. of National**	33933	7982	41915(62)

	Importance			
11.	**Others**	163	47	210(4)
	Combined Total	**150297**	**52495**	**202792(577)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13 , 2013-14, 2014-15 and 2015-16).

Note 1: Figures in ( ) are the number of S&T HEO's type and year wise, contributing to various Estimates

2:Research Manpower in S&T disciplines includes: (i) Professors, Associate Professors and Assistant Professor of S&T disciplines.

(ii) Students of Ph.D. and Higher level in S&T disciplines.

2. Full Time Engagement (FTE) in R&D Activities in S&T Disciplines

Estimated FTE is presented in Table 4 for each of the 11 types for the five study years 2011 to 2015 Gender wise.

Table 4 : Estimated Full Time Engagement (FTE) *in S&T* Disciplines:

Type, Year and Gender- Wise

2011-12 FTE(Hours/week) 2012-13 FTE (Hours/week)

S. no.	↓Type	Male	Female	Total	Male	Female	Total
1.	**Central Universities**	3750.35	1090.00	4840.35(40)	6383.35	2373.00	8756.35(40)
2.	**Central Open Universities**	100.75	40.60	141.35(1)	117.25	42.40	159.65(1)
3.	**Deemed Universities Pvt.**	10726.20	4485.45	15211.65(65)	13242.55	5651.65	18894.20(65)
4.	**Deemed Universities Govt.**	4774.20	1222.75	5996.95(25)	5515.05	1624.50	7139.55(25)

5.	**Deemed Universities Govt. Aided**	1100.25	486.40	1586.65(10)	1413.60	604.80	2018.40(10)
6.	**Inst. Under Legislature Act**	151.50	24.35	175.85 (3)	231.10	46.50	277.60(4)
7.	**State Public University**	17186.55	6468.00	23654.55 (209)	16124.45	5908.45	22032.90(208)
8.	**State Private University**	3475.65	1140.35	4616.00 (69)	5744.75	1924.40	7669.15 (98)
9.	**State Open University**	23.00	8.00	31.00(2)	27.00	7.25	34.25(2)
10.	**Inst. of National Importance**	10505.10	2420.40	12925.50 (48)	15147.20	3497.40	18644.60 (50)
11.	**Others**	15.60	7.25	22.85(2)	23.05	9.50	32.55(2)
	Combined Total	**51809.15**	**17393.55**	**69202.70 (475)**	**63969.35**	**21689.85**	**85659.20 (506)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16).

Note 1: Figures in ( ) are the number of S&T HEO's type and year wise, contributing to various Estimates

2. FTE is calculated from number of Professors, Associate Professors, Assistant Professors and number of Research Students in S&T Disciplines

Contd.

Table 4 Contd.

		2013-14 FTE (Hours/week)			2014-15 FTE (Hours/week)		
S. no.	**↓Type**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
1.	**Central Universities**	8175.90	2980.55	11156.45(40)	7104.90	2437.15	9542.05 (40)
2.	**Central Open Universities**	38.00	15.15	53.15(1)	46.00	15.85	61.85(1)
3.	**Deemed Universities Pvt.**	14243.85	4956.15	19200.00 (65)	13110.65	4735.10	17845.75 (66)
4.	**Deemed Universities Govt.**	5247.15	1418.80	6665.95 (25)	6778.90	1892.45	8671.35 (25)
5.	**Deemed Universities Govt. Aided**	1441.05	640.10	2081.15 (10)	1694.90	791.15	2486.05 (11)
6.	**Inst. Under Legislature Act**	405.00	68.35	473.35 (4)	420.80	64.10	484.90 (4)
7.	**State Public University**	19989.90	7256.85	27246.75 (215)	21587.10	8224.35	29811.45 (219)
8.	**State Private University**	6768.95	2494.25	9263.20 (106)	8158.85	2852.45	11011.30 (138)
9.	**State Open University**	32.20	9.25	41.45(2)	22.25	8.50	30.75(2)
10.	**Inst. of National Importance**	20126.70	5192.15	25318.85 (50)	22355.25	5734.00	28089.25 (50)
11.	**Others**	40.10	15.80	55.90(2)	62.30	23.05	85.35(3)

	Combined Total	**76508.80**	**25047.40**	**101556.20 (521)**	**81341.90**	**26778.15**	**108120.05 (558)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16).

Note1: Figures in ( ) are the number of S&T HEO's type and year wise, contributing to various Estimates

2. FTE is calculated from number of Professors, Associate Professors, Assistant Professors and number of Research Students in S&T Disciplines

Table 4 Contd.

2015-16 **FTE(Hours/week)**

S. no.	↓Type	Male	Female	Total
1.	**Central Universities**	9310.05	3196.75	12506..80(40)
2.	**Central Open Universities**	28.70	11.80	40.50(1)
3.	**Deemed Universities Pvt.**	13399.10	6404.95	19804.05 (67)
4.	**Deemed Universities Govt.**	7539.00	2200.30	9739.30 (24)
5.	**Deemed Universities Govt. Aided**	2140.85	1308.70	3449.55 (11)
6.	**Inst. Under Legislature Act**	430.30	62.55	492.85(4)
7.	**State Public University**	24010.45	10892.45	34902.90 (219)

8.	**State Private University**	7698.10	2378.40	10076.50 (143)
9.	**State Open University**	22.25	18.75	41.00(2)
10.	**Inst. of National Importance**	26460.45	7065.80	33526.25 (62)
11.	**Others**	95.70	26.30	122.00(4)
	Combined Total	**91134.55**	**33566.75**	**124701.70 (577)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16).

Note1: Figures in ( ) are the number of S&T HEO's type and year wise, contributing to various Estimates

2. FTE is calculated from number of Professors, Associate Professors, Assistant Professors and number of Research Students in S&T Disciplines

3. Expenses on Research and Development in S&T Disciplines (ERD)

Estimated ERD are given in Table 5, calculated for each of the 11 types of HEO's for the five study Years 2011-12 to 2015-16. These are obtained from:

Expenses on R&D activities in S&T disciplines on Teachers, on Students and on Non- teaching Staff in research laboratories in each type of HEO

= Expenses on (Salary of S&T Teachers, laboratories of teachers and organizing or participation in Conferences) + Expenses on (Scholarship, laboratories, library and participation in Conferences) of S&T Students + Expenses on Salary of Non-teaching staff (NTS) engaged in S&T research laboratories.

The estimated ERD are given in Table 5 below:

Table 5: Expenditure on R&D Activities in Science and Technology (ERD) Type wise and Year wise

(In Crore Rupees)

S. No.	Type of HEO ↓	2011-12	2012-13	2013 - 14	2014 -15	2015-16
1	**Central University**	1283.15(40)	1774.54(40)	4157.53(40)	3569.14(40)	2672.18(40)
2	**Central Open University**	88.12(1)	68.56(1)	89.90(1)	81.57(1)	83.71(1)

3	**Deemed University Pvt.**	5908.20(65)	3002.90(65)	5872.62(65)	3683.95(66)	4497.27(67)
4	**Deemed University Govt.**	13780.42(25)	22267.17(25)	21259.82(25)	25146.63(25)	32866.33(25)
5	**Deemed Univ. Govt. Aided**	207.57(11)	264.22(11)	202.42(11)	187.13(10)	141.43(10)
6	**Inst. Under State Legislature Act**	948.78 (3)	304.02(4)	671.24(4)	843.49(4)	501.53(4)
7	**State Public University**	39305.14(209)	36602.53(208)	72755.98(215)	58549.33(219)	41337.21(219)
8	**State Private University**	43343.39 (69)	10637.50 (98)	8089.31 (106)	8349.82 (138)	3037.34(143)
9	**State Open University**	5.92(2)	6.97(2)	11.93(2)	25.04(2)	25.49(2)
10	**Institute of National Importance**	4141.65(48)	4770.72(50)	6640.72(50)	9584.74(50)	5983.77(62)
11	**Others**	10.50(2)	12.41(2)	12.34(2)	5.46(3)	16.06(4)
	Combined Total	**109022.84(475)**	**79711.54(506)**	**119781.81(521)**	**110026.30(558)**	**91162.32(577)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15, 2015-16).

Note :(i) Values in ( ) are number of type and year –wise HEO's contributing in various estimates

(ii) computed from equations (2.6),(2.7),(2.8),(2.12),(2.16),(2.20),(2.23),(2.27) in Chapter 2.

4. The Estimated FTE Equivalent Salary Expenditure in R&D Activities in S&T Disciplines (SERD)

It has been computed from the FTE equivalent salary paid, calculated from average monthly salary under VI Pay commission rates to the three categories viz. the Professors, Associate Professor and Assistant Professors and the scholarship paid to Research scholars, as given in the equation (2.29). These are presented in Table 6 below for all the 11 types, years and gender wise.

Table 6 : Estimated FTE Equivalent Salary Exp.(SERD) *in S&T* Disciplines: Type, Year and Gender- Wise

2011-12 2012-13 (In Crore Rupees)

S. no.	↓Type	Male	Female	Total	Male	Female	Total
1.	Central Universities	198.429	48.599	247.028 (40)	241.128	46.482	287.610 (40)
2.	Central Open Universities	3.620	0.587	4.207(1)	3.423	0.917	4.340(1)
3.	Deemed Universities Pvt.	657.319	243.395	900.714 (65)	771.285	280.585	1051.870 (65)
4.	Deemed Universities Govt.	94.174	24.666	118.840 (25)	348.852	79.650	428.502 (25)
5.	Deemed Universities Govt. Aided	38.970	14.796	53.766 (10)	47.228	17.652	64.880 (10)
6.	Inst. Under Legislature Act	18.110	2.896	21.006 (3)	22.177	4.483	26.660 (4)

7.	**State Public University**	312.283	81.317	393.600 (209)	822.716	211.685	1034.401 (208)
8.	**State Private University**	239.458	74.257	313.715(69)	482.299	154.954	637.253(98)
9.	**State Open University**	0.525	0.175	0.700(2)	0.531	0.197	0.728(2)
10.	**Inst. of National Importance**	1448.946	333.058	1782.004 (48)	1563.786	349.707	1913.493(50)
11.	**Others**	1.419	.395	1.814(2)	1.780	.536	2.316(2)
	Combined Total	**3013.253**	**824.141**	**3837.394 (475)**	**4305.205**	**1146.848**	**5452.053 (506)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011- 12, 2012-13, 2013-14, 2014-15 and 2015-16).

Note 1: Figures in ( ) are the number of S&T HEO's type and year wise, contributing to various Estimate

2. SERD includes: (i) Professors, Associate Professors and Assistant Professor of S&T disciplines.
(ii) Students of PhD or Higher level in S&T disciplines.

Table 6 Contd.

2013-14 SERD 2014-15 SERD

(In Crore Rupees)

S. no.	↓Type	Male	Female	Total	Male	Female	Total
1.	**Central Universities**	273.150	59.202	332.352(40)	305.023	68.879	373.902(40)
2.	**Central Open Universities**	3.630	1.408	5.038(1)	3.925	1.492	5.417(1)
3.	**Deemed Universities Pvt.**	763.767	295.901	1059.668 (65)	949.339	357.146	1306.485 (66)

4.	**Deemed Universities Govt.**	855.607	231.023	1086.63(25)	1004.568	282.342	1286.911 (2 5)
5.	**Deemed Universities Govt. Aided**	48.318	23.160	71.478(10)	49.172	26.395	75.567(11)
6.	**Inst. Under Legislature Act**	22.516	4.504	27.020(4)	28.040	4.025	32.065(4)
7.	**State Public University**	869.944	228.047	1097.991 (215)	982.820	277.511	1260.331 (219)
8.	**State Private University**	507.088	171.462	678.550 (106)	561.146	174.517	735.663 (138)
9.	**State Open University**	0.900	0.002	.902(2)	1.041	0. 003	1.044(2)
10.	**Inst. of National Importance**	2910.086	721.214	3631.300(50)	3912.378	1002.125	4914.503(50)
11.	**Others**	1.922	0.511	2.433(2)	2.123	0.598	2.721(3)
	Combined Total	**6256.928**	**1736.434**	**7993.362 (521)**	**7799.575**	**2195.034**	**9994.609 (558)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011- 12, 2012-13, 2013-14, 2014-15 and 2015-16).

Note1: Figures in ( ) are the number of S&T HEO's type and year wise, contributing to various Estimates

2: *SERD includes: (i) Professors, Associate Professors and Assistant Professor of S&T disciplines.*
(ii) Students of PhD or Higher level in S&T disciplines.

Table 6 Contd.

2015-16 SERD

(In Crore Rupees)

S. no.	↓Type	Male	Female	Total

1.	**Central Universities**	335.178	78.233	413.411(40)
2.	**Central Open Universities**	3.927	1.606	5.533(1)
3.	**Deemed Universities Pvt.**	1537.041	673.389	2210.430(67)
4.	**Deemed Universities Govt.**	1642.86	496.322	2139.182(24)
5.	**Deemed Universities Govt. Aided**	55.324	34.040	89.364(11)
6.	**Inst. Under Legislature Act**	28.200	5.164	33.364(4)
7.	**State Public University**	980.461	292.042	1272.503(219)
8.	**State Private University**	568.271	170.805	739.076 (143)
9.	**State Open University**	1.164	0.006	1.170(2)
10.	**Inst. of National Importance**	4173.731	1052.366	5226.097(62)
11.	**Others**	2.562	.705	3.267(4)
	Combined Total	**9382.719**	**2804.678**	**12133.397 (577)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE Database 2011- 12, 2012-13, 2013-14, 2014-15 and 2015-16).

Note1: Figures in ( ) are the number of S&T HEO's type and year wise, contributing to various Estimates

2: *SERD includes: (i) Professors, Associate Professors and Assistant Professor of S&T disciplines.*
(ii) Students of PhD or Higher level in S&T disciplines.

5. Some Important Observations about ERD and SERD:

Values of ERD is larger then the SERD values, both are calculated on Research mainpower (Phd and or Higher level students and the three category of teachers) in S&T displiances. This is because

(a) ERD includes expenses on (i) participation' organizations of conferences (RACT) and (ii) Libeary and libratory (LILB) apart from the Scholarship to research student and Salary to teachers.

The SERD is based on only the Scholarship to research student and salary (VI) pay commission paid to the three categories or teachers. or four of the belonging to S&T displiances.

(b) The RACT and LILB are taken from the block 1G of final data of AISHE database the an othentics financial data of AISHE may be casing this difference.

Since revised salaries in VII Pay commission was not paid till 2015-16, VI Pay Commission Salary band and Grade Pay has been used in SERD.

6. Percentage of Students Enrolment in Categories of Disciplines

It is of interest to know whether there is an inclination of students to enrol in some specific disciplines. To identify the disciplines which are more preferred, the percentage P, of students' enrolments is computed for each of the 92 disciplines in each of the five study years. 2011-12 to 2015-16.
The number of students' enrolment in each discipline in each of 11 types of HEO's are determined in each of the five study years. Table 5.6a (in Appendix) presents these numbers. Total enrolment for each of the 92 disciplines is shown in the last but one column. From these, the percentage (=P) of the enrolments in each discipline have been obtained as shown in the last column of the said table.

Table 7 gives below the categories of disciplines according to percentage of enrolments, year wise in all the 11 types of HEO's. The summarized findings of this table are listed in Chapter 6 Section 6.6.

The name of the disciplines with corresponding numbers have been provided as a ready reference below this Table.

Table7: Various Disciplines According to Percentage of Students' Enrolments Year wise

2011-12			
5%<P≤10.5%	**2%≤P<5%**	**1%≤P<2%**	**P<1%**
20,28,29,71, 78,80(6)	1,10,12,13 ,15,17,36, 59,70,83, 92(11)	9,50,67,68 ,69,73,75, 77,82,85 (10)	2,3,4,5,6,7,8,11,14,16,18,19,21,22,23,24,25,26,27,30,31 ,32,33,34,35,37,38,39,40,41,42,43,44,45,46,47,48,49,51 ,52,53,54,55,56,57,58,60,61,62,63,64,65,66,72,74,76,79 ,81,84,86,87,88,89,90,91(65)
2012-13			
5%<P≤10.5%	**2%≤P<5%**	**1%≤P<2%**	**P<1%**

10,71,78,80, 90(5)	1,12,13,15 ,17,26,28, 29,36,59, 70,83,92 (13)	9,50,67, 68,73,75, 77,82,85 (9)	2,3,4,5,6,7,8,11,14,16,18,19,20,21,22,23,24,25,27,30,31, 32,33,34,35,37,38,39,40,41,42,43,44,45,46,47,48,49,51, 52,53,54,55,56,57,58,60,51,62,63,64,65,66,69,72,74,76 ,79,81,84,86,87,88,89,91(65)
2013-14			
5%<P≤10.5%	**2%≤P<5%**	**1%≤P<2%**	**P<1%**
28(1)	10,13,20,2 9,71,78,80 (7)	1,9,12,15, 17,36,70, 83,90,92 (10)	2,3,4,5,6,7,8,11,14,16,18,19,21,22,23,24,25,26,27,30,31, 32,33,34,35,37,38,39,40,41,42,43,44, 45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62, 63,64,65,66,67,68,69,72,73,74,75,76,77,79,81,82,84,85, 86,87,88,89,91(74)
2014-15			
5%<P≤10.5%	**2%≤P<5%**	**1%≤P<2%**	**P<1%**
10,20,28,29, 71,78,80(7)	1,12,13,15 ,17,69,70, 83,90 (9)	8,9,59,68, 73,75,77, 79,82,85,9 2 (11)	2,3,4,5,6,7,11,14,16,18,19,21,22,23,24,25,26,27,30,31,32,33,34,35,36,37,38,39,40,41, 42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,60,61,62,63,64,65,66,67,72,74,7 6,81,84,86,87,88,89,91 (65)
2015-16			
5%<P≤10.5%	**2%≤P<5%**	**1%≤P<2%**	**P<1%**
20,28,71,78, 80(5)	1,9,10,12, 13,15,17, 29,69,70,8 3,92(12)	8,59,67,68 ,73,75,77, 79,82,85 (10)	2,3,4,5,6,7,11,14,16,18,19,21,22,23,24,25,26,27,30,31,32,33,34,35,36,37,38,39,40,41, 42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,60,61,62,63,64,65,66,72,74,76,8 1,84,86,87,88,89,90,91 (65)

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16).

Note1.P is the percentage of Students' Enrolments obtained in Table 5.6a

2. ( ) contain number of disciplines *with indicated range of P.*

List of Disciplines in Table 7

Disciplines	**Disciplines**	**Disciplines**
1. Agriculture	32. Anesthesiology	63. Public Health
2. Forestry	33. Ayurveda	64. Radiology
3. Horticulture	34. Bio-Physics	65. Radiotherapy
4. Sericulture	35. Bio-Statistics	66. Urology
5. Aeronautical Engineering	36. Bio-Technology	67. Bio chemistry
6. Agriculture Engineering	37. Cardiology	68. Bio science
7. Architecture	38. Dentistry	69. Bio Technology
8. Chemical Engineering	39. Dermatology	70. Botany

9. Civil Engineering	40. Endocrinology	71. Chemistry
10. Computer Engineering	41. ENT	72. Electronics
11. Dairy Technology	42. Forensic Medicine/Toxicology	73. Environmental science
12. Electrical Engineering	43. Gastroenterology	74. Genetics
13. Electronics Engineering	44. General Medicine	75. Geology
14. Food Technology	45. General Surgery	76. Geo-Physics
15. Information Technology	46. Gynaecology	77. Life Science
16. Marine Engineering	47. Haematology	78. Mathematics
17. Mechanical Engineering	48. Hepatology	79. Microbiology
18. Metallurgical Engineering	49. Homeopathy	80. Physics
19. Mining Engineering	50. Micro-Biology	81. Science
20. Other Eng. and Technology	51. Nephrology	82. Statistics
21. Transportation planning	52. Neurology	83. Zoology
22. Planning	53. Nursing	84. Anthropology
23. Urban planning	54. Oncology	85. Economics
24. Fisheries science	55. Ophthalmology	86. Geography
25. Food Technology	56. Orthopaedics	87. Population Studies
26. Home Science	57. Pathology	88. Dairy Science
27. Nutrition	58. Pediatrics	89. Veterinary & Animal Sciences
28. Computer Application	59. Pharmacy	90.New Engineering & Technology
29. Computer Science	60. Physiology	91.Other Medical Science
30. Marine Science / Oceanography	61. Plastic Surgery	92.Other Science
31. Anatomy	62. Psychiatry	

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16) and Table1.5 (a) of this project.

Limitations of the Study

While trying to search and pick out the data required for discipline and gender wise computations of the three estimates viz. Manpower, FTE and SERD and for ERD (Type-wise, Year-wise) to achieve the objectives of the project, some problems were faced. Some of them were related to the limitations of the Database which was available for this purpose. Some data required for proper estimation, has not been collected/presented in AISHE database. Missing data is another problem faced and the unreported data, ID of which had to be deleted is the third possibility. Some of these points are classified below.

Limitations of AISHE Database

1. **MPFT** for each of all the HEO's cannot be evaluated since:
    - The data given by AISHE in Data Sharing information group cannot be separated for each HEO's easily.
    - Data on various Blocks of DCF files are available for all types of HEO's but without their ID's and listed in a single file, in each of the years 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16.
    - Summary of teaching staff contains only total number of teachers in the three categories.
    - Filtering for discipline and gender wise data on students and teachers required quite long time.
    - Disciplines of NTS are not available.
2. **Calculation of ERD is not possible in straight forward way since**:
    - The segregated expenses on research and development in S&T disciplines (Including equipment's, laboratory, and maintenance, material for Lab., visiting faculty, seminars / symposia / conferences and contingency) are not available in Block 1 G. The Salary figures are also for whole of HEO, not for S&T employees.
    - The numbers of non-teaching employees in S&T departments are not available.
    - Library and Laboratories expenses in Block 1G are given for whole HEO's, not discipline wise.
    - Expenses on Research Activities are available in Block 1 G for whole of the HEO's, not discipline wise.
3. Data available in AISHE database for Salary is available in thousands. Figures appear very small as the pay is much enhanced in the VI pay commission. Salary calculations on the basis of these data therefore, do not seem to be correct. For each of the Id's.
4. The consistency of data on number of students, on teachers and on finance are missing. There is present unexplainable high or low fluctuations to affect various estimates also.

Limitations of our study

1. All stated estimates of Manpower (or Total Head Counts) Research Manpower and Expenditure (ERD) are underestimates of these true but unknown values. Reason being that the unavailable values (i.e. '0' for all five years) and many adjusted missing values for any one or two or three or four years (in total five years study period 2011 to 2015) are likely to introduce departures from actual values.

The '0' (Zero) values of reported expenses may not be zero but some positive values not reported by uploading. This is more likely to result in underestimate.

2. From a deeper probe into the Budget Section of BHU, it was detected that some of the expenditures are not reported to AISHE. Such as expenditure incurred on

(a) Medical Reimbursement
(b) LTC
(c) Retirement benefits
(d) Gratuity

etc. are not added up in the expenditure in BHU. These do not go in any of the heads of expenditure given in DCF-I Block 1G. Hence remain unreported.

3. Similarly, The BHU has not included the fellowships (JRF,SRF and RA ship) provided by any other Funding agency like UGC, DST, ICMR, CSIR etc and also State Govt. Grants or Aids, or Scholarship Etc. in the amount uploaded in the Block 1G head 'Scholarship'.
This also leads to underestimate of expenses on R&D activities.

4. It is not clear whether Ph.D. students reported in the data base in a year include only the newly Registered and those requiring minimum 2 years compulsory attendance or also those who are in Extended period to enable them complete their research work before submission of their Ph.D. Thesis. This also may lead to under estimate of Manpower.

5. There should be strict checking on the reasonable number of digit on finance data in Block 1G. Many times Salary or expenses on Research activities (RACT) is much larger or smaller than Expenses on 'Scholarship' and 'Library and Laboratory '.
We tried to modify such erratic fluctuations but that also on our judgement. So may vitiate the True estimates.
Moreover, because of these reasons, especially the questionable authenticity of the financial data (As officials) we do not find steady trend in the expenditure results. It is seen from the graphs And tables that there are ups and downs with advancing years in the expenditure values of ERD.

Reasons of Discrepancy of Four Measure with Advancing Years

Reasons for Manpower:

R1: For Types 1, 7 & 8 the reason may be incomplete data uploading in 2015-16

R2: Same reason as mentioned is above for type 3, 5 & 6**.**

R3: Because sometimes the data of the students and teachers are not properly reported, there is Fluctuation in Manpower in Type 11.

Reasons for ERD:

R4: In Type 2 (Central Open University) all the four finance data are decreasing and increasing next year up to 2013-14. For the last two years, that is 2014-15 and 2015-16 finance data do not change. It is Because all the Four (Salary, Scholarship, LILB and RACT) data are missing and have been adjusted by taking averages. So there is only a minor change in ERD in these two years, because of the multipliers (which are the proportions: P_{ST} ,P_{SS} and P_{NTS}).

R5: The same reason as for Type 2, is causing increase and decrease of ERD in Types 6, 7 and 11.

R6: In Type 3 (Deemed University Pvt.) there is fluctuation in finance data each year. except in the last two years. There is no adjustment in any year because data is given for each year from 2011-12 to 2015-16.

R7: In Type 8, the number of HEO's are increasing with passing years but for the reported financial data ERD is sharply decreasing in 2012-13 and there is gradual decrease up to 2015-16.

R8: In Type 10 though the number of HEO's increase in 2015-16 but may be due to under reporting in 2015-16, there is decrease of ERD in 2015-16.

Explanatory Notes for Tables

The five our measures viz. **Manpower**, **Research Manpower**, Full Time Engagement in R&D Activities (**FTE**) Expenditure on Research & Development Activities in Science & Technology (**ERD**) and FTE Equivalent Salary Expenditure on R&D Activities in S&T Disciplines (SERD) have been estimated and presented in Table 0.1,0.1a,0.2,0.3,0.4,3,4,5 & 6 of Executive Summary. The same are also given in detail in Chapter 5 Tables 5.2, 5.2a, 5.3, 5.4 and 5.5. Percentage of Students Enrollment is in Table 7 of Executive Summary and 5.7 of Chapter 5.

All these measures have been estimated from the AISHE database for the 11 Type of HEO's for each of the five study years 2011-12 to 2015-16.

All these measures are only for Science and Technology (S&T) disciplines.

I) **Table 5.1 Number of HEO's contributing to the said Estimate of Five our Measures.**

Required data for these measures are not available for each of HEO's of the 11 Types of HEO's for each of the said five study years.

If any of these required data i.e. number of S&T students, number of S&T Teachers, any one of the four Finance data viz. expenses on 'Salary' , 'Scholarship' , 'Library and Laboratory' and 'Research Activities' is not available for <5 years, it is adjusted using missing data technique mentioned in Chapter 4. If any of these is missing for all the 5 years, that HEO is deleted, from consideration. Table 5.1 gives the remaining number of HEO's for each of 11 Types for each of the 5 study years which have contributed to computation of the estimates of the aforesaid four measures. These numbers for all the 11 Types for the five study years are 475 in 2011-12; 506 in 2012-13; 521 in 2013-14; 558 in 2014-15 and 577 in 2015-16.

Values of the said five measures have been computed from the data required to compute these estimates for each of the 11 Types and for the combined 11 Types. The number of HEO's contributing to the estimates, for each of the 11 Types for each of five study years have also been shown in Table 5.1

II) (a) Manpower (Head counts) given in Table 3, Table .01 and Table 5.2

This measure is computed from equations (2.1), (2.2) and (2.3) in Chapter 2. This includes the S&T Teachers, and PG and higher level S&T students.

S&T teachers are of three categories: Professors, Associate Professors and Assistant Professors PG and higher level implies – M.Sc., M Tech, MD, MS, M Phil, and PhD Students.

(b) Research Manpower (Head counts) given in Table 3a, Table 0.1a and Table 5.2a

This is total of three categories of Teachers and/or PhD and Higher Level of Students
($=N_{AS}+N_{AP}+N_{PR}+S_{RES}$)

III) Full Time Engagement (FTE) in R&D Activities in S&T Disciplines (Tables 4, .02 and Table 5.3)

This measure is based on the expression given in equation (2.5) in Chapter 2.
Thus it is evident that it is based on the number of all the three categories of S&T teachers and all the S&T Research Students. In AISHE data base only Ph. D. students' numbers are given, not of the JRF, SRF, RA etc. Established norms of proportions have been used to compute FTE.

IV) Expenditure on R & D Activities in Science and Technology (ERD) (Tables 5, .03 and Table 5.4)

This is computed from the equations (2.6), (2.7), (2.8), (2.12), (2.16), (2.20), (2.23) and, (2.27) in Chapter 2.

As mentioned in this Chapter ERD has three components – (i) expenses on R&D activities of S&T teachers, (ii) expenses on R&D activities of S&T students and (iii) expenses on salary of non –teaching employees engaged in S&T departments. AISHE database neither gives number of non-teaching employees in S&T departments nor gives salary paid to these employees.

Similarly the other three expenses 'Scholarship' , 'Library and Laboratory' and 'Research Activities' used in calculation of ERD , given in Block 1G of the AISHE database , are for whole of the HEO, not for only S &T departments

Hence the proportions P_{ST}, P_{SS} and P_{NST} of S&T teachers, of S&T students and of non –teaching employees of S&T departments are used to estimate the ERD.

Thus computation of ERD is completely based on the 'Salary' of S&T teachers, and non–teaching employees of S&T departments, 'Scholarship' of S&T students Library and Laboratory Expenses' and "Research Activities 'given for the whole of the HEO's.

V) The fifth measure is FTE Equivalent Salary Expenditure on R&D Activities in S&T Disciplines (SERD) (Tables 6, .04 and Table 5.5)

This measure is obtained from the equation (2.29) in Chapter 2. It is not dependent on all the four items of Financial Data of AISHE Database used for ERD. It uses only part of 'Scholarship' proportional to number of S&T Research Students.

The average monthly payments according to VI Pay Commission to the three categories of S&T teachers are added to the payment of 'Scholarship' to S&T Research Students to give SERD.

However, the multiplication by fractions for computing FTE is also done. Annual values thus computed are obtained for all the five study years.
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VI) Percentage of Students' Enrolment in Various S&T Disciplines (Tables 7 and Table 5.7)

These are obtained from the PG and Higher level students enrolled in each of the 92 S&T Disciplines and the total number of S&T Students (S_{ST}). The expression is given by equation (5.7) in Chapter 5.

Reasons for SERD:

R12: Reason for decrease of SERD in Type 1 for 2014-15 is that the number of PhD students is smaller than that in 2015-16.

R13: Reason for decline of SERD in 2012-13 from 2011-12 for Type 4 is the decrease of Scholarship to about $(1/10)^{th}$ of that in 2011-12. For Type-9 the same decline is because of decrease in number of Assistant Professors in 2012-13 from 2011-12.

R14: Reason for decline of SERD in Type 6, for 2015-16 from 2014-15 is due to decline of PhD scholars and Professors.

R15: There is increase in SERD of 2015-16 from 2014-14 for Type 7, due to quite high increase in scholarship of PhD students.

Chapter 1 Introduction

1.Back Ground

Report on this Project entitled "Quantification of R&D Resources in Higher Education in India" scheduled up to October 31, 2016 was presented in the meeting held on 21st October 2016 at NSTMIS Division, of DST, Govt. of India Ministry of Science and Technology, Technology Bhawan, New Delhi 110 016.

The report provided insights on the stock of manpower in S&T (both head count and full time engagement (FTE)) and other related important dimensions in the higher education sector such as expenses on R&D activities of S&T teachers and students. Moreover, the FTE equivalent salary expenditure (SERD) has also been obtained.

The report was based on the All India Survey of Higher Education (AISHE), conducted annually for the years 2011-12 to 2014-15 by the Ministry of Human Resources Development. The following gives a list of main findings in the report mentioned above:

(i) Numbers of S&T Students enrolled in all the 11 Types of Higher Educational Organizations(HEOs') for all the four years 2011-2014.

(ii) Total numbers of S&T Teachers in all the 11 Types of HEOs' for all the four years 2011-2014.

(iii) 'Manpower' for all the 11 types of HEOs' for all the four years 2011-2014. The 'Manpower' includes all the S&T teachers and all the S&T students of PG and higher levels including S&T M.Phil students.

(iv) Full Time Engagement (FTE) in R&D Activities in S&T Disciplines. For this DST norms of proportion of weekly working hours in research activities of Lecturers, Readers, Professors and research students (including M.Phil Students) had been used.

(v) Expenditures on S&T teachers and students and non-teaching employees engaged in S&T research labs (ERD) have been found for all the 11 Types of HEOs' for all the four years 2011-2014. This expenditure included payments of salary and fellowship and expenses in

research labs, maintenance of research labs and library and on participation in conferences.

(vi) Incorporating the suggestions of honourable members in the presentation meeting for modification about the expenditure mentioned in point no. (v), the Pay-Scale and Grade-Pay for the three categories of teachers (Professors, Readers and Lecturers) have been used to calculate **the FTE equivalent salary expenditure (SERD).** These calculation were obtained using

(a) The DST norms of calculating FTE

(b) UGC reports for 2011-2014 and Total S&T Teachers (N_{ST}) obtained from AISHE database for the four years 2011-2014 to calculate numbers of the three categories of teachers (Professors, Readers and Lecturers).

The findings of the report fulfil / bridge the gap on R&D in the higher education sector for the national R&D statistics being brought out by the CHORD, DST.

It was also apprised that the 2015-16 data has also been uploaded in the AISHE data base.

In view of these, it was unanimously suggested that this Project should also undertake to include study on 2015-16 uploaded data. Some modifications were also suggested, which could not be captured in the maiden attempt ie. on the dimensions related to data by gender and S&T disciplines in higher education sector.

The suggestions for the modifications to be incorporated were very clearly discussed, points listed and communicated in the Minutes dated 26th October, 2016.

The modified objectives and procedure to achieve these is given below.

2.Objectives:

This part of the Project has the following objectives. Each has to be obtained gender-wise and discipline-wise

(I) To estimate the manpower (or total head counts) engaged in S&T by disciplines and gender.

(II) To compute the full time engagement (**FTE**) in R&D activities by type of higher education organisation, by S&T disciplines and gender.

(a) A study on analysis of trend and stability of expenditure on R&D Activities (**ERD**) in S&T Disciplines for 2015-16 also on the same lines as for earlier four study years 2011 to 2014 to validate the authenticity of data.

(b) To obtain the FTE equivalent Salary Expenditure on R&D activities in S&T discipline(SERD) discipline and gender wise.

This study is based on the AISHE database from 2011 to 2015. It is appropriate that the nature of the contents of data base, relevant to this study be described in brief.

About AISHE

(i) Coverage

This study includes all the Indian Universities, their Affiliated Colleges and/or Research Institutes. The list of Institutions, the disciplines (the subject areas) and educational programs (i.e. level of education UG, PG, Research and Integrated level) have been provided by them. This is thus generating the complete database of higher education in all the Indian Higher Education Institutions. The list of institutions has also been categorized.

This study thus covers all the Indian Universities, their Affiliated Colleges and/or Research Institutes, hence the complete geographical boundary of India.

(ii) Levels, Disciplines and Degrees

The MHRD Reports give Tables 1, 2 & 3 listing all the broad disciplines, disciplines (subjects of studies), all the levels and all the Programmes (or degrees) included in their all India survey.

(iii) Categorization of HEO's

All HEO's have been grouped in to 11 categories or types, shown in enclosed Table 1.2 and Table 1.2(a). In all, the following tables are given to illustrate some nature of AISHE data base. Their position in the report is also indicated.

Table 1.1(a) to (e) : **List of All Indian Universities/ Institutions ,Year and their Types - wise**

is the type and state wise list of HEO's for the five study years 2011-12 to 2015-16 for each of the 11 types of HEO's(included in Appendix)

Table 1.2 : Year- wise and Type- wise Number of Universities/ Institutions

is the summary of **Table 1.1** with year wise numbers of said HEO's in various HEO categories. (given in this Chapter)

Table 1.2(a): Total Number of Higher Education Organizations (HEO's) with S&T Disciplines by Their Types and Years (given in this Chapter)

Table 1. 3(a) : ID's and Names of HEO's which Changed Types

Gives the list of HEO's whose types were changed during the five study years 2011-12 to 2015-16. (given in this Chapter)

Table 1.3(b): List of HEO's with Changed Names and/or Types with same ID: Year wise

Gives the list of HEO's with same ID whose names changed or their types changed during the five study years 2011-12 to 2015-16 (given in this chapter).

Table 1.2 : Year –wise and Type-wise Number of Universities/ Institutions

University Type	Total No. Year wise				
	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
1. Central University	42	42	42	43	43
2. Central Open University	1	1	1	1	1
3. Deemed University-Private	79	80	80	79	79
4. Deemed University-Government	38	36	36	36	32

5. Deemed University- Government Aided	11	11	11	11	11
6. Institute under State Legislature Act	5	5	5	5	5
7. State Public University	286	292	309	316	329
8. State Private University	105	122	149	181	197
9. State Open University	13	13	13	13	13
10. Institute of National Importance	59	62	68	69	75
11. Others	3	3	3	5	13
12. State Private Open University	0	0	0	1	1
TOTAL :	**642**	**667**	**717**	**760**	**799**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16).
Note1. Type12 has no S&T disciplines

Table 1.2(a) Total Number of Higher Education Organization (HEO's) with S&T Disciplines by their Types and Years

S.NO.	University Type	2011-12	2012-13	2013-14	2014-15	2015-16
1	**Central University**	40	40	40	40	40
2	**Central Open University**	1	1	1	1	1
3	**Deemed University-Private**	72	72	72	72	74
4	**Deemed University-Government**	31	31	31	31	33
5	**Deemed University-Government Aided**	11	11	11	10	10
6	**Institute under State Legislature Act**	4	4	4	4	5
7	**State Public University**	210	210	215	219	219
8	**State Private University**	97	123	128	149	162
9	**State Open University**	13	13	13	13	13

10	**Institute of National Importance**	59	62	68	69	68
11	**Others**	3	3	3	5	8
Total		541	570	586	613	634

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16).

Table 1.3 (a): ID's which Changed Type

ID and Name of HEO	Initial Type	Duration in Years	Changed Type	During Year(s)
116	**Type 4**- Deemed University Govt.	2011-2014	**Type 10-** Inst. of National Importance	2015-2016
202. Birla Inst. of Technology, Ranchi	**Type 5-** Deemed University Govt. Aided	2011-2013	**Type 3-** Deemed University, Private	2014-2015
267	**Type 4-** Deemed University Govt.	2011-2014	**Type 10-** Inst. of National Importance	2015-2016
286	**Type 4-** Deemed University Govt	2011-2014	**Type 10-** Inst. of National Importance	2015-2016
453	**Type 3-** Deemed University, Private	2011-2014	**Type 5-** Deemed University Govt. Aided	2015-2016
516	**Type 4-** Deemed University Govt	2011-2014	**Type 10-** Inst. of National Importance	2015-2016

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16).

Table 1.3 (b): HEO's with Changed Name and/or Type with Same ID:Year –wise

Year: 2011			Year 2012		
ID	**Name of HEO**	**Type**	**ID**	**Name of HEO**	**Type**
163	The Northcap University	State Pvt. University	163	ITM University, Gurgaon	State Pvt. University
252	Central University of Kerala,Kasaragod	Central University	252	Central University of Kerala, Trivendrum	Central University
323	Savitribai Phule Pune University	State Public University	**323**	Pune University,Pune	State Public University
382	IK Gujral Punjab Technical University, Jalandhar	State Public University	382	Punjab Technical University, Jalandhar	State Public University
418	DrSarvapalli Radhakrishnan Rajasthan Ayurved University, Jodhpur	State Public University	418	Rajasthan Ayurved University, Jodhpur	State Public University
530	Motilal Nehru National Institute of Technology, Allahabad	Inst. Of National Importance	530	Motilal Nehru Institute of Technology, Allahabad	Inst. Of National Importance
532	Nehru Gram BharatiVishvavidyalaya, Allahabad	Deemed University Private	532	Nehru Gram Bharati, Allahabad	Deemed University Private
549	Uttar Pradesh Technical University, Lucknow	State Public University	549	Gautam Buddh Technical University, Lucknow	State Public University
584	Indian Inst. of Engg. Sc.& Tech. Shibpur,WB	Inst. Of National Importance	**584**	The Bengal Engg. & Sc. University, Howrah	State Public University
592	Maulana AbulKalam Azad University of Technology,West Bengal	State Public University	**592**	West Bengal University of Technology, Kolkata	State Public University
593	Gujarat Forensic Sciences University	State Public University		Gujarat Forensic Sciences University,Gandhinagar	State Public University

	Year:2013			**Year:2014**	
132	Ganpat University, Vidyanagar, Gandhinagar	State Private University	132	Ganpat University, Ganpat Vidyanagar, Kherva	State Private University

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database2011-12,2012-13,2013-14,2014-15and2015-1

(C) About AISHE database by MHRD

The MHRD Instruction Manuals of 2013 and of 2015 give all the instructions for providing the desired data. Extensive nature of required data were needed from each of the HEO's. In order to have better understanding, for ease of providing appropriate data in correct form, for different types of HEO's four DATA COLLECTION FORMAT(DCF) viz. DCF I, DCF II, DCF III, and DCF IV, have been developed. As is quite normal the DCF's used in 2010-11 needed much reform as spaces for many needed information were left unanswered. There are not much changes in the DCF's of 2013 and 2012. The DCF's can be downloaded, filled off- line following the Instruction manual. Usually the tabular form of DCF's are quite clear for submitting required information. The completed DCF's can be subsequently uploaded to the given portal of the AISHE database.

The following table describes in brief the DCF's to be used by a specific type of HEO's, blocks contained in various DCF's and a description of the data to be filled in various blocks.

Table 1.4 DCF's, Their Blocks, Data to be filled in each block and HEO's using Various DCF's

DCF	Blocks 2013 2015	Basic Data	No of Items	Types of HEO's for which Prepared
DCF -I	1. A	Basic Information of The University/University Level Institutions	12	• Central University • State University • Deemed University • Institute of National Importance
	1. B	Details of Regional Centres Attached With Open/Dual mode University	1	
	1. C	Detail of Faculty/Department-wise Programmes offered by the University/University Level Institutions	3	
	1. D	Staff Information-Teaching & Non-Teaching	2	
	1. E	Student Enrolment	0	
	1. F	Examination Result	0	

	1. G	Financial Information	2	
	1. H	Infrastructure Related Information	21	
	1. I	Scholarships , Loans & Accreditation	3	
	1.J	Off-Shore Centre/College(2015)	1	
	1. K	Remarks	0	
DCF-II	2. A	Basic Information of the College/Institution , Affiliated/Recognized by the University	16	• All Affiliated Colleges with Universities • Institutions not affiliated with any University • All PG centre's /Campus centres of Universities
	2. B	Details of Faculty/Department-wise Programmes offered by College/Institution	2	
	2. C	Staff Information-Teaching & Non-Teaching	2	
	2.D	Student Enrolment	0	
	2.E	Examination Results	0	
	2. F	Financial Information	2	
	2.G	Infrastructure Related Information	21	
	2.H	Scholarship , Loans & Accreditation	3	
	2.I	Remarks	0	
DCF-III	3.A	Basic Information of the Institution	12	• IIM's • Institutes approved by different Ministries • Management Institutes recognized by AICTE (other than IIM's) • Polytechnics and other diploma level
	3.B	Details of Courses offered by the Institution	3	
	3.C	Staff Information-Teaching & Non-Teaching	2	
	3.D	Student Enrolment	0	
	3.E	Examination Result	0	
	3.F	Financial Information	2	
	3.G	Infrastructure Related Information	21	
	3.H	Scholarships , Loans & Accreditation	3	

	3.I	Remarks	0	Technical Institutions (recognized by AICTE) and Administrated by State Directorate of Technical Education • Diploma level Nursing Institutes • Diploma level Teacher Training Institute
DCF-4 Only in 2015				• Student Enrolment data for each 5 Other Minorities

Instructions have been provided for filling data in each item.

Structure of AISHE Database

The **detailed database** structure can be described as follows:

In short the huge database of a given year can be briefly described as:

There are 6 folders in AISHE website viz.

1. User Management (Contains User information)
2. Form Management (Contains the information about the DCF form status of Higher Educational Organizations (HEO's))
3. Directory of Institutions (Contains the list of HEO's)
4. Reports (Contains Data files)
5. Survey Guidelines
6. Progress Monitoring (Progress percentage of various types of HEO's)

REPORT folder contains 20 information groups (Table 1.0) in which various kinds of data are available about HEO's.

Under the Report folder the 16th information group "Data Sharing" contains data from completed DCF received from Universities, Colleges and Stand-alone Institutions.

Using the ID and password provided by Officials of MHRD, the appropriate blocks of uploaded and completed DCF forms' blocks 1A, 1D, 1E and 1G have consulted for the required data for achieving project objectives

3.Present Study

It was appropriately desired by DST to assess quantitatively the resources used in Research and Development in Science and Technology (S&T) discipline and gender wise.

Coverage: All the HEO's within whole of Indian boundary, surveyed by MHRD and included in AISHE database are included.

The Level of Education: All the PG and above levels of students are considered. Thus the study includes M.Sc., MCA, M Tech., MBBS, MD/MS, M.Phil., Ph.D. and Integrated M.Sc., M Phil and Ph.D. levels.

The Subject Areas: The broad disciplines and disciplines which have been considered in original project (shown in Table 1.5 of the original Project Report) have been approved by DST in 3rd week of August, 2015.

Table 1.5: Lists the broad disciplines, disciplines (subjects of studies), levels and Programmes (or degrees) to be included in this study. (Given at the end of this Chapter)

As can be seen that the total number of disciplines in the said table are 89 in 9 broad disciplines. These are all considered in this study.

While extracting Students' and Teachers' data discipline wise, it is found that there are many more disciplines reported, than the 89 listed in Table 1.5. We have clubbed such disciplines with those of Table 1.5 taking into care the following points:

(i) Clubbed with one of 89 disciplines of Table 1.5 with which the new discipline seems to have highest similarity of course content.

(ii) Clubbed with a discipline of broad discipline on the basis of degree awarded, e.g. clubbed in the discipline of Science, if MSc degree is in data. If degree is M Tech then clubbed with a discipline of Broad discipline of Engineering and Technology and if it is MD or MS then with a discipline of Medical Science.

(iii) Three new disciplines have been added as **Other Science, New Engineering Technology** and **Other Medical Science** to club those disciplines which do not match with the existing disciplines

The Table 1.5(a) shows the bulk of disciplines clubbed with some of the existing disciplines of Table 1.5 and those clubbed with three new disciplines. (Given at the end of Chapter 1). Thus,

Table 1.5 (a): List of Broad Disciplines, Disciplines and Clubbed Disciplines gives the complete and a big list of disciplines which have been found to be followed in many S&T HEO's. Those which are closely related the 89 disciplines of the Table 1.5, are clubbed with them. Three more new disciplines have been added to accommodate those disciplines which did not appear to be related with the existing 89 disciplines. (Given at the end of this Chapter)

The methodology adopted for achieving all the objectives mentioned above is described in Chapter 2: **Methodology**. Chapter 3**: Data Extraction**, deals with the steps for accessing the required data from the MHRD database named AISHE and arranging them in suitable form for computation. Chapter 4: **Missing Data Handling** gives the difficulties due to missing data in database and the ways of obviating these problems. Chapter 5: **Computations** gives the tabular form of the results of computation and Chapter 6**: Findings** summarizes the findings. **Executive Summary** is added at the beginning and one can have an idea of salient findings at a glance, which are detailed in the subsequent pages, with tables and graphs. The **Appendices** contains big tables which will require large number of pages compared to the Chapter size. CD contains huge computational results for all the contributing HEO's, Discipline and Gender wise.

Table 1.0: Information Group of REPORTS Folders of AISHE Database

S.No.	Group Name	No. of Files
1.	Basic Reports	03
2.	List of Reporting Institutions	03

3.	Number of Institutions	08
4.	Teaching Staff	15
5.	Non-Teaching Staff	14
6.	Student Enrolment	30
7.	Programmes & Discipline	24
8.	Gender Ratio	10
9.	Out Turn	07
10.	Infrastructure	11
11.	Pupil Teachers Ratio	03
12.	List of Institutions	03
13.	Time Series	44
14.	Others	07
15.	UGC Reports	03
16.	Data Sharing	04
17.	Know Your institutions (For KYC Portal)	04
18.	Finance	02
19.	Progress Monitoring	04
20.	Remuneration	01

Source: DST Project 2016 Quantification of R&D Resources in Higher Education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15).

Table No 1.5. Considered Broad Disciplines, Disciplines and Degrees in S & T

Broad Discipline Group	*Discipline Group*	*Level*	*Programme name and degree conferred*
1. Agriculture	1. Agriculture	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil, Ph.D., M.Sc.
	2. Forestry	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil, Ph.D., M.Sc.
	3. Horticulture	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil, Ph.D., M.Sc.
	4. Sericulture	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil, Ph.D., M.Sc.
2. Engineering and Technology	5. Aeronautical Engineering	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S., B. Tech M. Tech., M. Phil. Ph.D., M.E., M. Tech.
	6. Agriculture Engineering	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D. ,B.S. M.S., B.Tech M.Tech., M.Phil., Ph.D., M.E., M. Tech
	7. Architecture	Integrated, M. Phil, Ph.D., Post Graduate	B.S. M.S., B.Tech M.Tech., M. Phil., Ph.D., M.Arch, M.E., M.Tech
	8. Chemical Engineering	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S., B.Tec hM.Tech., M. Phil., Ph.D., M.E., M.Tech
	9. Civil Engineering	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D. ,B.S. M.S., B.Tech M.Tech., M.Phil., Ph.D., M.E., M.Tech
	10. Computer Engineering	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S., B.Tech M.Tech., M. Phil., Ph.D., M.E., M.Tech
	11. Dairy Technology	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D. ,B.S. M.S., B.Tech M.Tech., M.Phil. ,Ph.D., M.E., M.Tech

Broad Discipline Group	*Discipline Group*	*Level*	*Programme name and degree conferred*
	12. Electrical Engineering	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D. ,B.S. M.S., B.Tech M.Tech., M. Phil., Ph.D., M.E., M.Tech
	13. Electronics Engineering	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S., B.Tech M.Tech., M.Phil., Ph.D., M.E., M.Tech
	14. Food Technology	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D. ,B.S. M.S., B.Tech M.Tech., M. Phil., Ph.D., M.E., M.Tech
	15. Information Technology	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S., B.Tech M.Tech., M. Phil., Ph.D., M.E., M.Tech
	16. Marine Engineering	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S., B.TechM.Tech., M.Phil.,Ph.D., M.E., M.Tech
	17. Mechanical Engineering	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S., B.Tech M.Tech. M.Phil.,, Ph.D., M.E., M.Tech
	18. Metallurgical Engineering	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S., B.Tech M.Tech., M.Phil., Ph.D., M.E.,
	19. Mining Engineering	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D.,B.S. M.S., B.Tech M.Tech., M.Phil. ,Ph.D., M.E.,
	20. Other Eng. and Technology	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S., B.Tech M.Tech., M. Phil. ,Ph.D., M.E.,
	21. Transportation planning	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D. ,B.S. M.S., B.Tech M.Tech., M. Phil., Ph.D., M.E.,
	22. Planning	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S., B.Tech M.Tech., M.Phil., Ph.D., M.E.,
	23. Urban planning	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S., B.Tech M.Tech., M.Phil., Ph.D., M.E.,

Broad Discipline Group	***Discipline Group***	***Level***	***Programme name and degree conferred***
3. Fisheries science	24. Fisheries science	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D., M.Phil, Ph.D., M.F.Sc.
4. Home Science	25. Food Technology	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M.Phil., Ph.D., M.Sc.
	26. Home Science	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D., M.Phil., Ph.D., M.Sc.
	27. Nutrition	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil., Ph.D., M.Sc.
5. Computer	28. Computer Application	Integrated, M. Phil, Ph.D., Post Graduate	Integrated M.C.A, M. Phil., Ph.D., M.C.A., M.Sc.
	29. Computer Science	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., Integrated M.Sc., M. Phil., Ph.D., M.Sc.
6. Marine Science /Oceanography	30. Marine Science / Oceanography	Integrated, M Phil, Ph.D., Post Graduate	Integrated Ph.D., M.Phil., Ph.D., M.Sc.
7. Medical Science	31. Anatomy	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil., D.M., Ph.D., M.D., M.S.*, M.Sc.(Medical Anatomy)
	32. Anaesthesiology	Integrated, M.Phil., Ph.D., Post Graduate	Integrated Ph.D., M.Phil., D.M., Ph.D., M.D.,
	33. Ayurveda	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M.Phil., Ayurveda Vachaspati, D.M., Ph.D., M.A.M.S.*, M.D., Vachaspati
	34. Bio-Physics	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil., D.M., Ph.D., M.D.,

Broad Discipline Group	*Discipline Group*	*Level*	*Programme name and degree conferred*
	35. Bio-Statistics	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil., D.M., Ph.D., M.D.,
	36. Bio-Technology	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil., D.M., Ph.D., M.D.,
	37. Cardiology	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil., D.M., M.Ch., Ph.D., M.D.,
	38. Dentistry	Integrated, M.Phil, Ph.D., Post Graduate	IntegratedPh.D., M.Phil., D.M., Ph.D., M.D.S., M.D.,
	39. Dermatology	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil., D.M., Ph.D., M.D.,
	40. Endocrinology	Integrated, M Phil, Ph.D., Post Graduate	Integrated Ph.D., M.Phil., D.M., M.Ch., Ph.D., M.D.,
	41. ENT	Integrated, M Phil, Ph.D., Post Graduate	Integrated Ph.D., M.Phil., M.D., M.S.*
	42. Forensic Medicine /Toxicology	Integrated, M.Phil., Ph.D., Post Graduate	Integrated Ph.D., M.Phil., D.M., Ph.D., M.D.,
	43. Gastroenterology	Integrated, M.Phil., Ph.D., Post Graduate	Integrated Ph.D., M.Phil., M.ch., D.M., Ph.D., M.D.,
	44. General Medicine	Integrated, M.Phil., Ph.D., Post Graduate	Integrated Ph.D., M.Phil., D.M., Ph.D., M.D.,
	45. General Surgery	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M .Phil., D.M., Ph.D., M.D., M.S.*
	46. Gynaecology	Integrated, M .Phil, Ph.D., Post Graduate	Integrated Ph.D., M.Phil., D.M., Ph.D., M.D., M.S.*

Broad Discipline Group	*Discipline Group*	*Level*	*Programme name and degree conferred*
	47. Haematology	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil., D.M., Ph.D., M.D.,
	48. Hepatology	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil., D.M., Ph.D., M.D.,
	49. Homeopathy	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil., D.M., Ph.D., M.D.,
	50. Micro-Biology	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M.Phil., D.M., Ph.D., M.D.,
	51. Nephrology	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D., M.Phil., D.M., Ph.D., M.D.,
	52. Neurology	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil., D.M., M.Ch., Ph.D., M.D.
	53. Nursing	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil., D.M., Ph.D., M.D., M.Sc., M.Sc. Nursing
	54. Oncology	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D., M.Phil., D.M., M.Ch., Ph.D., M.D.,
	55. Ophthalmology	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M.Phil., D.M., Ph.D., M.Optom., M.D., M.S.*
	56. Orthopedics	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil., D.M., Ph.D., M.D., M.S.*
	57. Pathology	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil., D.M., Ph.D., M.D.,
	58. Pediatrics	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil., D.M., M.Ch., Ph.D., M.D.,

Broad Discipline Group	*Discipline Group*	*Level*	*Programme name and degree conferred*
	59. Pharmacy	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M.Phil., D.M., Ph.D., M. Pharma., M.D., M.Sc. (Medical Pharmacology), Pharma. D.
	60. Physiology	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil., D.M., Ph.D., M.D., M.Sc.(Medical Physiology)
	61. Plastic Surgery	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D., M.Phil., D.M., M.Ch., Ph.D., M.D.,
	62. Psychiatry	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D., M.Phil., D.M., Ph.D., M.D.,
	63. Public Health	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil., D.M., Ph.D., M.P.H., M.D.,
	64. Rediology	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D., M.Phil., D.M., Ph.D., M.D.,
	65. Radiothrapy	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M.Phil., D.M., Ph.D., M.D.,
	66. Urology	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil., D.M., M.Ch., Ph.D., M.D.,
8. Science	67. Bio chemistry	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S. , Integrated M.Sc., M .Phil., Ph.D., M.S., M.Sc., M.Sc. (Medical Bio-chemistry)
	68. Bio science	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S. , Integrated M.Sc., M. Phil., Ph.D., M.S., M.Sc.
	69. Bio Technology	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S. , Integrated M.Sc., M. Phil., Ph.D., M.S., M.Sc.

Broad Discipline Group	*Discipline Group*	*Level*	*Programme name and degree conferred*
	70. Botany	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S. , Integrated M.Sc., M. Phil., Ph.D., M.S., M.Sc.
	71. Chemistry	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S. , Integrated M.Sc., M. Phil., Ph.D., M.S., M.Sc.
	72. Electronics	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S. , Integrated M.Sc., M.Phil., Ph.D., M.S., M.Sc.
	73. Environmental science	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S. , Integrated M.Sc., M.Phil., Ph.D., M.S., M.Sc.
	74. Genetics	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S. , Integrated M.Sc., M.Phil., Ph.D., M.S., M.Sc.
	75. Geology	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S. , Integrated M.Sc., M. Phil., Ph.D., M.S., M.Sc.
	76. Geo-Physics	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S. , Integrated M.Sc., M. Phil., Ph.D., M.S., M.Sc., M.Sc. Tech. (Applied Geo-Physics)
	77. Life Science	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S. , Integrated M.Sc., M.Phil., Ph.D., M.S., M.Sc.
	78. Mathematics	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S. , Integrated M.Sc., M. Phil., Ph.D., M.S., M.Sc.

Broad Discipline Group	*Discipline Group*	*Level*	*Programme name and degree conferred*
	79. Microbiology	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S. , Integrated M.Sc., M. Phil., Ph.D., M.S., M.Sc., M.Sc.(Medical Microbiology)
	80. Physics	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S. , Integrated M.Sc., M. Phil., Ph.D., M.S., M.Sc.
	81. Science	Ph.D.	D.Sc.
	82. Statistics	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S. Integrated M.Sc., M. Phil., Ph.D., M.S., M.Sc., M. Stat.
	83. Zoology	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., B.S. M.S. , Integrated M.Sc., M. Phil., Ph.D., M.S., M.Sc.
	84. Anthropology	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M.Phil., Ph.D., M.Sc.
	85. Economics	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil., Ph.D., M.Sc.
	86. Geography	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil., Ph.D., M.Sc.
	87. Population Studies	Integrated, M.Phil, Ph.D., Post Graduate	Integrated Ph.D., M.Phil., Ph.D.
9. Veterinary & Animal Sciences	88. Dairy Science	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil., Ph.D., M.Sc., M.V.Sc.
	89. Veterinary & Animal Sciences	Integrated, M. Phil, Ph.D., Post Graduate	Integrated Ph.D., M. Phil., Ph.D., M.Sc., M.V.Sc.

Source: DST Project 2016 Quantification of R&D Resources in Higher Education in India, BHU (Derived from the AISHE Manual of year 2015

NOTE: 1. M.S. - Master of Surgery (Under Medical Science Discipline)*

2. M.S. – Master of Science

3. M.Sc. – Master of Science

Table 1.5(a) Disciplines Clubbed with 89 Disciplines of Table 1.5 and with Three Newly Added Disciplines.

S.NO	Broad Disciplines	Disciplines	Clubbed Disciplines
1	**1. Agriculture**	1. Agriculture	Agri-Business Management, Agricultural Chemistry, Agricultural Economics, Agricultural Extension and Communication, Agricultural Physics, Agricultural Statistics, Agro-Metrology, Agronomy, Basic Science and Agriculture, Crop-Physiology, Entomology, Mycology and Plant Pathology, Plant Physiology, Plant Pathology, Plant Protection, Plant Soil Science, , Seed Science and Technology, Soil Science and Genetics and Plant Breeding,
		2. Forestry	Agro-Forestry, Forestry and Environment, Forestry Biology and Tree Improvement Forestry and Natural Resources, , Tree Breeding and Forest Biology, Silviculture,
		3. Horticulture	Entomology(ID-654), Horticulture Vegetable Science
		4. Sericulture	$$
2	**2. Engineering and Technology**	5. Aeronautical Engineering	Avionics, Aerospace Engg., Atmospheric Sciences, Aerospace Engg., Earth and Space Sciences, Space Science & Technology, Space Engineering & Rocketry.
		6. Agriculture Engineering	Agricultural Engineering & Sciences, Agricultural and Food Engineering, Agriculture Process and Food Engg., Agri-Biotech., Agri Process Engg., Farm Power and Renewable Energy, Farm Machinery and Power Engg, Soil and Water Engg., Soil and Water Conservation, Seed Science and Technology.
		7. Architecture	Architecture and Regional Planning, Building Technology,
		8. Chemical Engineering	Biotechnology and Chemical Engineering, Chemical & Polymer Engineering.
		9. Civil Engineering	Civil Engg. And Structure, Civil Engg & Fluid, Construction Engg. Structural Engg..,
		10. Computer Engineering	CS and IT, Computer Science Engg, Computer Sc. IT & Mathematics, Computer and Information Sciences, Computer Sciences and Electronics, Computer Integrated Design and Manufacturing, Embedded Systems,

			Information Systems, Security Engineering and Information Technology, VLSI.
		11. Dairy Technology	$$
		12. Electrical Engineering	$$
		13. Electronics Engineering	Applied Electronics& Instrumentation, Engineering Science, Electronics and Communication Engg, Opto Electronics, Telecommunication Engg.
		14. Food Technology	Bio-Engineering and Food Technology, Food Processing Engineering, Food Engg. And Technology, Food Technology and Biochemical Engg.
		15. Information Technology	Information Security and Cyber Forensics, Telecom Engineering
		16. Marine Engineering	$$
		17. Mechanical Engineering	Applied Mechanics, Automobile Engg., Mechatronics, Engineering Mechanics, Mechanical & Automation Engineering, Mechanical & Industrial Engineering.
		18. Metallurgical Engineering	Industrial Metallurgy Engg, Materials Science and Engineering, Metallurgical & Materials Engineering.
		19. Mining Engineering	Mining Machinery Engineering.
		20. New Engineering Technology	Artificial Intelligence and Neutral Networks, Alternate Hydrology, Automated Engg, Automated Manufacturing, Biological Engineering, Bio Chemical Engg, Bio Medical Engg., Biochemistry and Bioprocess Tech., Bioinformatics Engg, Biotech Engg., Biomedical Instrumentation Engineering, Cement Technology, Clean Technology, Ceramic Engg, Cryogenic Engineering, CAD\CAM, Communication Systems Engineering, digital Communication, Digital Electronics and Communication, Earthquake Engineering, EE\EEE\EC, Embedded System,Energy Engineering, Energy System and Technology, Engineering Physics, Environmental Engg, Electrical and Computer Sc., Energy Tech., Energy & Power Engg.&Technology, Engineering Physics, Electric Power System Sc. &Technology, Energy& Environment Engineering, Environmental Science and Engineering, General Engg., Hydrology Water Sc. and Tech,

			Instrumentation and Control Engg., Industrial Mathematics, Industrial and Production Engg., Industrial and Systems Engineering, Laser Technology,Mechatronics Microbic Technology, Manufacturing Technology, Materials Engg, Material Science & Engineering, Material Science and Technology, Material Technology, Minerals, Metallurgical & Materials Engineering, Medical Electronics Engg, Mechatronics & Robotics, Mechatronics & Robotics, Molecular and Cellular Engg., Mechanical and Civil Engg., Microbial Engg, Manufacturing and System Engg, Nano Sc. and Engg., Nano Technology, Nano Science and Technology, Nuclear Sci. and Tech., Nuclear Engg., Petroleum Engg and Tech Printing Engg., Petroleum Exploration, Pharmaceutical Tech., Polymer Sc., Safety & Occupation Health Engg., Petroleum Engg., Pipeline Engineering, Pharmaceutical Sc. and Tech., Power Electronics Engg., Polymer Sc., Power System, Printing Technology, Process Design Engineering, Remote Sensing, Remote Sensing and Geoinformatics, Remote Sensing and GIS, Renewable & Alternate Energy, Safety & Occupation Health Engg., Surgical Technology, Solar Energy, Surface Science and Engineering , Science, Engg. and Petroleum Tech., Soil, Water Land Engg, System Engg, Tissue Engg, Thermal Engineering, Welding Engineering, Water Resources Engineering.
		21. Transporting planning	
		22. Planning	
		23. Urban planning	
		*Other Engg., Technology	Engineering and Technology.
3	**Fisheries Science**	24. Fisheries Science	Aquaculture, Extension and Statistics Division, Fisheries, Fisheries Economics, Fisheries Resources, Harvest Division, Harvest and Post.
4	**4. Home Science**	25. Food Technology	Food Processing, Food Technology.
		26. Home Science	Family Resource and Management, Home Sc., Dietetics, Food Services and Dietics.
		27. Nutrition	Food and Nutrition, Nutrition and Diatics.

5	**5. Computer**	29. Computer Science	Computer, Computational Sc., Computer Studies, Computer Studies, Mathematics and Computing Science, Mathematical & Information Science.
		28. Computer Applications	$$
6	**6. Marine Science/Oceanography**	30. Marine Sciences/Oceanography	Marine Biology, Marine Science & Technology, Marine Living Resources, Microbiology and Biochemistry, Marine and Coastal Studies, Ocean Engineering.
7	**7. Medical Science**	31. Anatomy	$$
		32. Anesthesiology	Anaesthesia, Anaesthesia and Critical Care, Neuroanesthesia, Anesthesiology and Critical Care.
		33. Ayurveda	$$
		34. Bio-Physics	$$
		35. Bio-Statistics	Bio-Statistics & Health Informatics
		36. Biotechnology	Experimental Medicine & Biotechnology, Molecular Medicine & Biotechnology, Nuclear Medicine & Biotechnology.
		37. Cardiology	Cardio Lab Tech., Cardio Pulmonary Disorder, Cardio/CTUS, Cardio Thoracic Surgery, Cardio Vascular and Thoracic Surgery.
		38. Dentistry	Conservative Dentistry &Endodontic, Dental Sc., Dental Surgery, Oral Health Sciences, Oral Pathology & Microbiology, Oral Medicine, Pedodontics, Oral Surgery, Oral & Maxillofacial Surgery, Orthodontics &Dentofacial, Orthotics-Prosthetics Sections., Pedodontics&Preventive Dentistry, Periodontics Prosthodontics and Crown and Bridge.
		39. Dermatology	Dermatology, Venereology and Leprosy.
		40. Endocrinology	Endocrine Surgery.
		41. ENT	$$
		42. Forensic Medicine/Toxicology	Forensic Science.
		43. Gastroenterology	Surgical Gastroenterology.

		44. General Medicine	Critical Care Medicine DNB-Nuclear Medicine, Emergency Medicine, Experimental Medicine, Musculo Skeletal Disorder, Nuclear Medicine, Physical Medicine and Rehabilitation, Pulmonary Medicine, Regenerative and TransplantationMedicine (stem cell), Telemedicine, Transfusion Medicine.
		45. General Surgery	HPB Surgery and Liver Transplantation, Plastic, Plastic Surgery & Burns, Reconstructive and Microsurgery, Surgery, Neuro Surgery.
		46. Gynaecology	Maternal & Reformation Health Neonatal Science Tech., Neonatology, Obstetrics & Gynaecology.
		47. Haematology	Clinical Haematology, Transfusion Medicine and Haematology.
		48. Hepatology	$$
		49. Homeopathy	$$
		50. Micro-Biology	Medical Microbiology, Microbiology and Fermentation Tech.,
		51. Nephrology	$$
		52. Neurology	Neuro Anaesthesiology, Neuro Biochemistry, Neurochemistry, Neuro Microbiology, Neuro psychology, Neurological & Psychometric Disorder, Neuro Radiology, Neuro Sciences Nursing, Neurosurgery, Neurovirology, Neuroscience Unit.
		53. Nursing	MPH, Psychiatric Nursing, Medical Surgical Nursing (GNM).
		54. Oncology	Medical Oncology, Radiation Oncology, Surgical Oncology,
		55. Ophthalmology	Clinical Optometry, Ocular Microbiology, Ocular Pathology, Ocular pharmacology.
		56. Orthopedics	$$
		57. Pathology	Histo-pathology, Immuno-pathology.
		58. Pediatrics	Pediatrics Surgical Super Specialty, Pediatric Gastroenterology, Pediatric Hepatology,Pediatric Medicine, Pediatric Surgery.
		59. Pharmacy	Ayurvedic Pharmacy, Allopathic Pharmacy, Clinical Pharmacology, Pharmaceutical Analysis, Pharmaceutical Bio –Technology, Pharmaceutical Chemistry, Pharmacognosy& Phytochemistry, Pharmaceutical Sciences,

			Pharmacology, Pharmaco informatics, Pharmacology and Toxicology, Pharmaceutics, Pharmaceutics science, Pharmacy Practice.
		60. Physiology	$$
		61. Plastic Surgery	$$
		62. Psychiatry	Clinical Psychology, Health and Mental Health, Mental Health, Medical and Mental abilities, Psychiatric Nursing, Psychology,
		63. Public Health	Community Medicine, Community Health, Community Health Nursing, Community Rehabilitation, Epidemiology, Health& Medical Sciences, Health and Hospital Management, Health Science, Population Health.
		64. Radiology	Neuro Imaging and Interventional Radiology, Oral Medicine and Radiology, Radio diagnosis, Radio diagnosis & Imaging, Radiotherapy and Tech., Radiological Physics and Bioengineering.
		65. Radiotherapy	$$
		66. Urology	$$
		*Other Med. science	Bio-chemistry, Clinical Biochemistry, Clinical Research, Haematology and Blood Transfusion, Human Genetics, Hospital Administration, Immuno Haematology and Blood Transfusion, Immunology and Molecular Medicine, Internal Medicine, Medical Genetics, Medical Clinical Research, Medical Elementology & Toxicology, Medical Science, Medical Physiotherapy, Naturopathy and Yogic Science, Oral Pathology and Micro-biology, Paramedical Science, Paramedical Speech Pathology and Audiology, Physiotherapy, Paramedical Science, Unani Dispenser Paramedical Science.
	8. Science	67. Biochemistry	Medical Biochemistry.
		68. Bio Sciences	Biology, Biological Science,Clinical Biochemistry.
		69. Biotechnology	Biosciences and Technology, Biotechnology & Bio- informatics, Bio-technology and Molecular Biology.
		70. Botany	Botany & Microbiology, Plant Sc.
		71. Chemistry	Applied Chemistry, Chemical Science, Integrated Chemistry, Organic Chemistry.

		72. Electronics	$$
		73. Environmental Sciences	Earth and Environmental Sciences, Earth and Environmental Studies, Ecology and Environment Division, Environmental Biology, Environmental Economics.
		74. Genetics	Molecular and Human Genetics.
		75. Geology	Applied Geology, Earth Sciences, Geology and Geophysics, Geo-Informatics, Geo Science.
		76. Geo-Physics	$$
		77. Life Sciences	Bio-electronics, Bioinformatics, Biotechnology & Life Science, Botany and Microbiology, Computational Biology and Bioinformatics, Entomology, Environmental and life Sc., Environment and Traditional Ecosystems, Evolutionary and Organismal Biology Herbal Sc., Molecular Biology and Genetics, Virology & Immunology.
		78. Mathematics	Applied Maths, Applied Mathematics & Humanities, Maths and Stats. Mathematics and Allied Science.
		79. Microbiology	Microbiology and Cell Biology.
		80. Physics	Applied Physics, Astrophysics, Material Sc. and Physics, Medical Physics, Physics and Electronics, Physics including Renewable Energy.
		81. Science	Applied Science, Sciences and Technology.
		82. Statistics	$$
		83. Zoology	Anatomy, Physiology, Zoology & Environmental Sciences.
		84. Anthropology	$$
		85. Economics	Actuarial Economics, Applied Economics Econometrics.
		86. Geography	Area Study.
		87. Population Studies	$$
		*Other Sciences	Astronomy, Allied Sciences, Behavioural & Allied Science, Bioelectronics and Instrumentations Chemioinformatrics, Bioinformatics, Chemistry and Physics, Criminology and Forensic Science, Clinical Nutrition, Energy Studies, Interdisciplinary

			Sciences, Material Sc., Medical Tech, Materials Sciences, Operation Theatre(Tech.)-(These Tech disciplines give M.Sc. degree) Photonic Sc., Polymer Science, Research, Renewable Energy, Signal Processing, Theoretical Sciences.
	9. Veterinary & Animal Sciences	88. Dairy Science	Animal Husbandry and Dairying, Dairy Chemistry, Dairy Economics, Food and Dairy Technology, Food Quality and Safety Assurance, Food Science and Nutrition, Statistics and Management.
		89. Veterinary and Animal Science	Agriculture and Animal Husbandry, Animal Husbandry, Animal Biochemistry, Animal Biotechnology, Animal Genetics and Breeding, Animal Nutrition, Animal Reproduction Gynaecology and Obstetrics, Livestock's Product Tech., Veterinary Public Health, Veterinary Extension Education, Veterinary Gynaecology and Obstetrics, Veterinary Medicine, Veterinary Parasitology, Veterinary Pathology, Veterinary Virology, Veterinary Pharmacology, Veterinary Physiology, Veterinary Surgery and Radiology.

Source: DST Project 2016 Quantification of R&D Resources in Higher Education in India, BHU (Derived from the AISHE Manual of year 2015

*NOTE: 1. * Has been used one each for 3 new disciplines in these Broad Disciplines. 2-Engineering and Technology, 7- Medical Science and 8. Science these* marked disciplines contain many disciplines clubbed with them. These could not be clubbed with the 89 disciplines of Table 1.5.*

2. The $$ in last column indicates no new entry in previous column disciplines.

Chapter 2: Methodology

To achieve the objectives mentioned in Chapter 1, we give below the mathematical formulation of the expressions, values of which will provide the required estimates.

Section 2.1 gives the expressions for computing **MPFT**, the manpower mentioned in Objective 1, Section 2.2 that for FTE of Objective 2 and Section 2.3 provides the expressions for two types of expenditures **ERD** and **SERD**.

2.1 Objective 1. Manpower (or total head counts) engaged in S&T disciplines (**MPFT**).

To determine the manpower (discipline and gender-wise), the said AISHE database will be searched and disciplines and gender wise **MPFT** will be calculated from the general expression

$$\mathbf{MPFT = MPFT\ (T) + MPFT(S)} \qquad \mathbf{(2.1)}$$

Where,

MPFT (T) = The head counts of all the Teachers engaged in S&T disciplines, and

MPFT (S) = Should be total number of all the Research Students + Total number of Research Fellows, JRF's, SRF's, RA's in S&T disciplines;

But due to non-availability of each of the above, students given in block 1E of AISHE database in PG or higher level, will be used for calculating MPFT(S).

MPFT for each HEO of each of the 11 types of HEO's for each of the five years viz. 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16 has to be evaluated. These values for each of the ID's are added for each type of HEO's for each of the said five years to give the required yearly estimates.

In symbols:

Let $MPFT_{ijlk}$ = The total head counts of teachers and students engaged in l^{th} S & T discipline of k^{th}gender in j^{th} HEO of i^{th}type of HEO.

$$\mathbf{MPFT_i} = \sum_{j=1}^{ni} \sum_{l} \sum_{k=1}^{2} [\mathbf{MPFT_{ijlk}(T)} + \mathbf{MPFT_{ijlk}(S)}] = \mathbf{MPFT_{i...}} \qquad \textbf{(2.2)}$$

Where, i=1,2,.....,11 are the suffixes for i^{th} type of HEO,

n_i is the number of HEO's in i^{th} type of HEO

j=1,2,....,n_i are the suffixes for j^{th} HEO in i^{th} type of HEO

l are the suffixes for disciplines

k = 1, 2 are the suffixes for male and female respectively

$MPFT_{ij.k}$: Total head counts of teachers and students engaged in j^{th} HEO of i^{th}type of HEO with gender k (= 1 for males and = 2 for females).

$MPFT_{i..k}$: Total head counts of teachers and students engaged in i^{th}type of HEO with gender k (= 1 for males and = 2 for females).

$MPFT_{ij..}$: Total head counts of teachers and students engaged in j^{th} HEO of i^{th}type of HEO.

$MPFT_{i...}$: Total head counts of teachers and students engaged in i^{th} type of HEO.

The format of the data extraction tables for students and teachers are enclosed in Table 2.1.

Thus $\mathbf{MPFT_{ijlk}} = \mathbf{N_{ST_{ijlk}}} + \mathbf{S_{ST_{ijlk}}}$ **(2.3)**

Where,

N_{STijlk} = Number of Teachers in l^{th}S& T discipline in j^{th} HEO of i^{th} type of HEO of gender k(= 1 for males and = 2 for females), and

S_{STijlk} = Number of PG or Ph.D. and higher level Students in l^{th}S& T disciplines in j^{th} HEO of i^{th} type of HEO of gender k(= 1 for males and = 2 for females).

Some **disciplines are common in Science and Arts** streams. Of these only those disciplines (or subjects) **which provide MSc. Degree** (not MA degree only) are **considered for inclusion of their teachers' and students'** number.

The totals obtained from equation (2.2) will provide the required Manpower (total head counts) of teachers and students engaged in all the S & T disciplines in i^{th} type of HEO.

2.2 Objective 2. The Full Time Engagement (FTE) in S&T Research Activities:

In this part it is desired to estimate the FTE or full time engagement (FTE) of manpower in R&D activities in Science and Technology. This will consist of two parts given as

$$\mathbf{FTE = FTE\ (T) + FTE\ (S)} \qquad \mathbf{(2.4)}$$

Where, **FTE (T) = Full time engagement of teachers in R&D activities in S&T disciplines**

FTE (S) = Full time engagement of students in R&D activities in S&T disciplines

According to the same above mentioned guidelines, all the Ph.D. students, JRF, SRF and RA devote 100% in research activities.

Numbers of only Ph.D. and M.Phil. students are available. But as suggested by DST experts the **expression for FTE** is obtained as follows:

Let $\mathbf{S_{RES}}$ = Number of Ph.D. and higher level research students in S&T disciplines in an HEO.

$\mathbf{N_{AS}}$ = Number of Assistant Professors among all the S&T Teachers in an HEO.

$\mathbf{N_{AP}}$ = Number of Associate Professors among all the S&T Teachers in an HEO.

$\mathbf{N_{PR}}$ = Number of Professors among all the S&T Teachers in an HEO.

$\mathbf{N_{ST}}$ = Number of all the teachers in S&T disciplines in an HEO.

For all the five study years 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16 the said three numbers of N_{AS}, N_{AP} and N_{PR} among all S&T teachers ($=N_{ST}$) have been extracted.

Hence the FTE will be computed from

$$\begin{aligned}\mathbf{FTE} &= \mathbf{FTE(S) + FTE(T)}\\ &= \mathbf{S_{RES} + N_{AS} \times \frac{10}{40} + (N_{AP} + N_{PR}) \times \frac{14}{40}}\\ &= \mathbf{S_{RES} + N_{AS} \times 0.25 + (N_{ST} - N_{AS}) \times 0.35}\\ &= \mathbf{S_{RES} + 0.35\ N_{ST} - 0.10\ N_{AS}} \qquad \mathbf{(2.5)}\end{aligned}$$

In order to obtain the discipline-wise and gender-wise values of FTE some changes will be required as follows:

Let **FTE_{ijlk}**= Full Time Engagement of Manpower in R&D activities in l^{th} S&T discipline in j^{th} HEO of i^{th} type of HEO of gender k (= 1 for males and = 2 for females).

Where, as given earlier i=1, 2,.....11 are the suffixes for i^{th} type of HEO,

$j=1,2,....n_i$ are the suffixes for j^{th} HEO in i^{th} type of HEO

l are the suffixes for disciplines

k = 1, 2 are the suffixes for male and female, respectively.

FTE_{ijlk} (T) = Full Time Engagement of Teachers in R&D activities in l^{th} S&T discipline in j^{th} HEO of i^{th} type of HEO of gender k (= 1 for males and = 2 for females).

FTE_{ijlk} (S) = Full Time Engagement of Ph.D. and higher level students in R&D activities in l^{th} S&T discipline in j^{th} HEO of i^{th} type of HEO of gender k (= 1 for males and = 2 for females).

$FTE_{ijl.}$ = Full Time Engagement of Manpower in R&D activities in l^{th} S&T discipline in j^{th} HEO of i^{th} type of HEO.

$FTE_{ij.k}$ = Full Time Engagement of Manpower in R&D activities in S&T disciplines in j^{th} HEO of i^{th} type of HEO of gender k (= 1 for males and = 2 for females).

$FTE_{i..k}$ = Full Time Engagement of Manpower in R&D activities in S&T disciplines of k^{th}(= 1 for males and = 2 for females) gender.

$FTE_{ij..}$ = Full Time Engagement of Manpower in R&D activities in S&T disciplines in j^{th} HEO of i^{th} type of HEO.

$FTE_{i...}$ = Full Time Engagement of Manpower in R&D activities in S&T disciplines in i^{th} type of HEO.

The above if followed by (T), are figures for S&T teachers and by (S), are figures for S&T research students.

2.3 Expenditure on R&D Activities in S&T

In this section the method employed for computing the estimates of expenditure

have been by explained by defining the two expenditures and by giving the mathematical expressions for the same. In Section 2.3.1 **ERD** and in Section 2.4 **SERD** have been discussed.

` 2.3.1 Objective 3(a): ERD

As mentioned above to obtain the desired estimate of ERD for 2011 to 2015 of objective 3(a), as have been obtained for 2011-2014, first the necessary exact expression of the desired expenditure **ERD** is given after it is defined by :

ERD: expenses on research and development in S & T disciplines

$$\mathbf{ERD = ERDT + ERDS + ENTS} \qquad \mathbf{(2.6)}$$

where,

ERDT = expenses on R & D activities of teachers in S & T disciplines
ERDS= expenses on higher education of students in S & T disciplines, and
ENTS = Total salary of Non-Teaching Staff (NTS) in S & T disciplines

To obtain the first two components mentioned in (2.6) the expenses on the following extensions (1) & (2) from the database AISHE are to be picked up and added.

(1) This extension will be used with both the first two components in equation (**2.6**). It will be the salary component of both the two groups.

(2) This extension will also be used with the first two components of (2.6). It will include expenses on equipments, laboratory, and maintenance, material for Lab., contingency, visiting faculty and seminars / symposia / conferences.

Both the extensions (1) and (2) will be added together to get first component in the equation (2.6). For example,

$$\mathbf{ERDT = ERDT\ (1) + ERDT\ (2)} \qquad \mathbf{(2.7)}$$

Similarly, the second component ERDS will also be calculated by adding corresponding expenses with extensions (1) and (2), as

$$\mathbf{ERDS = ERDS\ (1) + ERDS\ (2)} \qquad \mathbf{(2.8)}$$

For third component ENTS, the number of non-teaching staff (NTS) in S & T disciplines, their pay group wise or the salary paid to NTS working in S & T departments are required

Calculation of (2.7) & (2.8) and the ENTS is not possible in straight forward way since

a) The segregated expenses (mentioned in 2.2) on research and development in S&T disciplines are not available.

b) (i) the number of non-teaching employees in S & T departments are not available.

(ii) Library and Laboratories expenses in Block 1G are given for whole HEO's.

(iii) Expenses on Research Activities are available in Block 1 G for whole of the HEO's,

Due to these characteristics of AISHE databases' Block 1G, we first calculate salary paid to S&T teachers as follows:

I - Calculation of Salary of S & T Teachers ($T_{ST_{SAL}}$)

A) Let P_{ST} be the proportion of the teachers in S & T departments among all the university teachers.

$$P_{ST} = \frac{N_{ST}}{T} \qquad (2.9)$$

Where, N_{ST} : Number of S & T teachers and T : Total number of teachers in HEO'S and

'Salary' given in Block 1G is the total money paid by an HEO to all its employees.

Hence salary of S & T teachers

$$T_{ST}sal = P_{ST} \times Salary \qquad (2.10)$$

Thus $ERDT_j\ (1) = P_{ST_j} \times Salary_j = A_j$ **(2.11)**

where

P_{STj} is proportion calculated for j^{th} HEO from equation (**2.9**)

$Salary_j$ is salary picked up from Block 1G for j^{th} HEO

$ERDT_j$ (1) is salary paid to S & T teachers in j^{th} HEO of i^{th} type of HEO.

Hence

$$\mathbf{ERDT_i(1)} = \sum_{j=1}^{ni} P_{ST_j} \times \mathbf{Salary_j} = \sum_{j=1}^{ni} \mathbf{A_j} \qquad \mathbf{(2.12)}$$

II. Calculation of Scholarship to S&T Students

$$\mathbf{ERDS\ (1) = P_{SS} \times Scholarship\ figure\ in\ Block\ 1\ G.} \qquad \mathbf{(2.13)}$$

Where

P_{SS} is proportion of S&T Students, given by

$$\mathbf{P_{SS} = S_{ST}/S} \qquad \mathbf{(2.14)}$$

S_{ST}=Number of S&T Students and S= Total number of students in HEO

Hence

$$\mathbf{ERDS\ (1) = P_{SS} \times Scholarship} \qquad \mathbf{(2.15)}$$

This is evaluated for each of the j^{th} HEO of i^{th} type of HEO, to give

$$\mathbf{ERDS_i\ (1)} = \sum_{j=1}^{ni} \mathbf{ERDSj\ (1)} = \sum_{j=1}^{ni} \mathbf{P_{SS_j} \times Scholarship_j} = \sum_{j=1}^{ni} \mathbf{Bj} \qquad \mathbf{(2.16)}$$

$ERDS_j$ (1) is scholarship paid to S & T students in j^{th} HEO of i^{th} type of HEO.

P_{SSj} is proportion of S &T Students in j^{th} HEO of i^{th} type of HEO.

$Scholarship_j$ is total scholarship paid to Students in j^{th} HEO of i^{th} type of HEO

Equation (2.16) is evaluated for each of the i^{th} type of HEO

III. Calculation of Expenses on R & D Activities

ERDT(2) cannot be obtained from the available database for teachers because the expenses in S & T labs or on S & T conferences(organising and participating) are not provided for S & T teachers.

Similarly **ERDS(2)** also cannot be obtained since the expenses on the S & T students on S & T labs or on participating in S & T conferences are not available in Block 1G. So we find

$$\mathbf{ERDT\ (2) + ERDS\ (2) = P_{NTS} \times (LILB + RACT)} \qquad \mathbf{(2.17)}$$

Where

P_{NTS}=Estimated proportion of S & T teachers and students in every HEO = **((No. of S&T students + No. of S&T Teachers) / (All the students + All the Teachers))** for every HEO under study or

$$P_{NTS} = (N_{ST}+S_{ST})/(T+S) \quad (2.18)$$

S_{ST} : No. of S & T students

S : No. of total students

LILB= Library and laboratories expenses given in Block 1G

RACT=Research activity expenses given in Block 1 G.

Thus for j^{th} HEO of i^{th} type of HEO

$$ERDT_j\ (2) + ERDS_j\ (2) = P_{NTS_j} \times (LILB_j + RACT_j) = C_j \quad (2.19)$$

Where
$LILB_j$ = Library & Lab. Expenses in Block 1G for j^{th}HEO
$RACT_j$=Research activity expenses given in Block 1 G for j^{th}HEO

P_{NTS_j} = Proportion of S & T teachers and students among all teachers and students for j^{th}HEO

Hence

$$ERDT_i\ (2) + ERDS_i\ (2) = \sum_{j=1}^{ni} [P_{NTS_j} \times (LILB_j + RACT_j)] = \sum_{j=1}^{ni} C_j \quad (2.20)$$

IV. Calculation of Salary of S&T Non-Teaching Staff (NTS)

Regarding **the third component** of equation (2.6), the salary paid to S&T, NTS, it is decided to use the standardized proportion P_{NTS}. This choice because it is presumed that the S & T NTS will be engaged according to their need depending on **Proportion of S & T teachers and students. Hence** for calculating the salary expenses on NTS engaged in S&T disciplines (=ENTS), the following expression is used

$$ENTS = P_{NTS} * \text{Total Salary (in Block 1G)} \quad (2.21)$$

where, as above,
P_{NTS} = ((No. of S&T students + No. of S&T Teachers) / (All the students + All the Teachers)) for every HEO under study.

Thus **for j^{th} HEO of i^{th}type of HEO** the salary paid to S&T, NTS will be obtained as follows:

$$\mathbf{ENTS_j = P_{NTSj} \times Salary_j = D_j} \qquad \mathbf{(2.22)}$$

Where,

$\mathbf{P_{NTS_j}}$: Estimated proportion of NTS engaged in S&T disciplines for j^{th}HEO of i^{th}type of HEO

$Salary_j$: Total Salary for j^{th}HEO of i^{th}type of HEO

Hence

$$\mathbf{ENTS_i = \sum_{j=1}^{ni} P_{NTS_j} \times Salary_j = \sum_{j=1}^{ni} D_j} \qquad \mathbf{(2.23)}$$

For obtaining **ERD** the expenses on research and development in S & T disciplines **of i^{th}type of HEO,** the following expression is evaluated for each of the 11 types of HEO's

$$\mathbf{ERD_i = \sum_{j=1}^{ni} [ERDT_j + ERDS_j + ENTS_j]} \qquad \mathbf{(2.24)}$$

$$\mathbf{= \sum_{j=1}^{ni} [ERDT_j(1) + ERDT_j(2) + ERDS_j(1) + ERDS_j(2) + ENTS_j]} \qquad \mathbf{(2.25)}$$

$$\mathbf{= \sum_{j=1}^{ni} [ERDT_j(1) + ERDS_j(1) + ERDT_j(2) + ERDS_j(2) + ENTS_j]} \qquad \mathbf{(2.26)}$$

$$\mathbf{= \sum_{j=1}^{ni} [A_j + B_j + C_j + D_j]} \qquad \mathbf{(2.27)}$$

Objective 3(b): The FTE Equivalent Salary Expenditure on R&D Activities in S&T Disciplines (SERD)

Because of the questionable authenticity of financial data in AISHE Data Base we obtain the said R&D expenditure by computing it from the 'Average Pay' of the three categories of S&T teachers. The number of three categories of teachers (1.Professors or equivalent, 2. Associate Professors/Readers/Lecturers (Sr. Grade) and 3. Assistant Professors/Lecturers) will be extracted from AISHE database for our project, for calculation of the FTE equivalent salary expenditure on R&D activities in S&T disciplines (SERD). The general formula used for it is given below:

Let the average monthly salary for the three categories of teachers viz. (i) Professors, (ii) Associate Professors and (iii) Assistant Professors be $\overline{S_1}$, $\overline{S_2}$ and $\overline{S_3}$. The average monthly salary for the said three categories are obtained from

$\overline{S_1}$ **= Average salary computed for category 1 (Professors) of teachers**

= ((Average pay band + average GP) = P_1) + (115% of P_1 = DA). **(2.28)**

Similarly $\overline{S_2}$, and $\overline{S_3}$ will also be determined.

The expression for **FTE equivalent salary expenditure on R&D activities in S&T disciplines (SERD)** is given as

$$[(N_{PR}\overline{S_1} + N_{AP}\overline{S_2}) \times \frac{14}{40} + N_{AS}\overline{S_3} \times \frac{10}{40} + S_{RES} \times P_{SS} \text{ x Scholarship}] \times 12 \qquad (2.29)$$

In order to get SERD discipline-wise and gender-wise the suffixes i, j, l, k will be attached. The desired summations will be obtained on k, l and j to get discipline-wise j^{th} HEO's wise and i^{th} type of HEO's wise, values of SERD.

$\mathbf{SERD_{ijlk}}$will give gender-wise, discipline-wise values of SERD for J^{th}HEO's in i^{th} type of HEO's.

The constituents of **SERD** viz. S_{RES} and P_{SS} will also have suffixes i, j, l and k as explained for **MPFT** and **FTE** of objectives 1 and 2 above.

Data Extraction Format: Format of data extraction table for a Report on Students and teachers are given below in **Table 2.1** : **Data Extraction Format.**

Table 2.1 Data Extraction Format

Type: **Year:**

Report Table for Students

				STUDENTS										
Sr. No.	**ID**	**University Name**	**Broad Discipline** / Discipline	**Level of Study/ Programme of Study**	**Total**		**S_{ST}**		**S_{PG}**		**$S_{M.PHIL}$**		**S_{RES}**	
					M	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**

Report Table for Teachers

				TEACHERS									
Sr. No.	ID	University Name	Broad Discipline	Total (T)		N_{ST}		N_{PR}		N_{AP}		N_{AS}	
			Discipline	M	F	M	F	M	F	M	F	M	F

Chapter 3. Data Extraction

As already mentioned in the last two chapters this project aims at achieving the following objectives. As a ready reference for this chapter these are again repeated and it may be kept in mind that discipline and gender wise results are to be produced.

(I) To estimate the manpower (or total head counts) engaged in S&T by disciplines and gender.

(II) To compute the full time engagement (FTE) in R&D activities by type of higher education organisation, by S&T disciplines and gender.

(III) **(a)** A study on analysis of trend and stability of expenditure on R&D activities in S&T Disciplines for 2015-16 also on the same lines as for earlier four study years 2011 to 2014 to validate the authenticity of data.

(b) To obtain the FTE equivalent Salary Expenditure on R&D activities in S&T in whole of Indian human resource in higher education.

All of these estimates are to be obtained from the AISHE Database for all the 11 types of HEO's in whole of India for the years 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16.

The methodology in last chapter gives the expressions which need to be evaluated to get these estimates for each of the 11 types of HEO's and one which is combined for all the HEO's in India for each of the five years 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16.

(a) For estimating the total head counts of teachers and students the expression in equation (2.3) is evaluated.

(b) For estimating FTE the values of S_{RES} from Block 1E and values of N_{AS} (the number of S&T Assistant Professors), N_{AP} (the number of S&T Associate Professors) and N_{PR} (the number of S&T Professors), from Block 1D have also been extracted along with values of T (total teachers) and N_{ST} (total of S&T teachers) both of all three categories, viz. Professors, Associate Professors and Assistant Professors.
Equation (2.5) has been used to estimate FTE for all the five study years 2011 – 2015.

(c) To obtain the FTE equivalent Salary Expenditure on R&D activities in S&T in whole of Indian human resource in higher education, the formula given in equation (2.29) is used. The seventh pay commission salary grades are used to compute the monthly average salary paid to each of the three categories of teachers. These are also computed from the equation (2.28).

For estimating the expenditure on R&D activities in S&T discipline the expressions in equations (2.12), (2.16), (2.20), (2.23) are to be evaluated and equation (2.27) combines all the said 4 expressions to get the desired estimate of objective III (a).

3.1 The Required Variables

After carefully scrutinize the above mentioned 7 equations from (2.3) to (2.27) it is observed that value of the following eleven variables are needed to compute the desired estimates mentioned in the two objectives: for all the five study years 2011 to 2015.

1. Total Students (S)
2. Total S&T Students (S_{ST})
3. Ph.D. and above Students in S&T (S_{RES})
4. Total Teachers (T)
5. Total S&T Teachers (N_{ST})
6. S&T Professors in three categories (N_{AS}), (N_{AP}) and (N_{PR}) , Discipline and gender wise
7. S&T Students in all the four levels, Discipline and gender wise
8. Total Salary paid by HEO (Salary)
9. Expenses on library and laboratory in an HEO (LILB)
10. Payment of Scholarship by an HEO (Scholarship)
11. Expenses on Research Activities in an HEO (RACT)

All these variables are not in the required form in the AISHE data base. For computing the values of various expressions in the above mentioned equations (2.3), (2.15), (2.19), (2.23), (2.26) and (2.30), the required values of above 11 variables have been entered in EXCEL files for each of the 11 types of HEO's.

A uniform format of the extracted data files has been adopted for all the five study years for each of the 11 types of HEO's. Table 3.1 (at the end of this chapter) gives the entered data particulars in various column headings.

3.2 Method of Data Extractions

As described in Chapter 1, the AISHE data base is huge not only because of large number (642 in 2011-12, 667 in 2012-13, 717 in 2013-14, 759 in 2014-15 and 799 in 2015-16) of total HEO's of 11 types of HEO's, but also because of number of disciplines (subjects), levels of imparted education and various programs (or conferred degrees) undergoing. From the full data base, data on the said variables for only those S&T disciplines, where PG or higher degree education is available, is to be considered for this study.

Hence as mentioned in Table 1.4, search for various values should be well directed. It should not be as groping for pearl in an ocean.

- As mentioned in Chapter 1, in the REPORT folder the 16th information group "Data Sharing" contains data from completed DCF forms uploaded by various HEO's.

As indicated in Table 1.4 the data about Teachers is available in Block ID and that about students is available in Block IE.

Table 1.5 and Table 1.5(a) give the list of broad disciplines, disciplines (or subjects), the levels and programs which are to be considered in this project.

Type of each University/Institution will be one of 1 to 11 and these types are as in Table 1.2 e.g.

Type of University:

1. Central University
2. .....
3. .....
4. Deemed University Govt.
5. .....
6. .....
7. .....
8. .....
9. .....
10. Institutes of National Importance
11. Others

Year:

One of 2011-12 or 2012-13 or 2013-14 or 2014-15 or 2015-16 is to be entered in a table. Thus each of the type will have 5 tables one for 2011-12 and second for 2012-13, third for 2013-14 , fourth for 2014-15 and fifth for 2015-16.

3.2.1 Extraction of Data on Students and Teachers

In order to extract data on number of students and teachers one has to find or calculate value of S and T, the total number of students S and total number of teachers T. The steps for this are

(a) For total number of students **S.**

1. Go to DCF I Block 1E.
2. Filter for ID's of a given Type of HEO's
3. See all the disciplines and number of enrolled students therein
4. Add all these to get S.
5. Write this in a file for the HEO with filtered ID.

(b) For total number of Teachers **T**.

1. Go to DCF I Block 1D.
2. Go to step 2 of (a) above.
3. Filter by 'Designation'. Retain all teachers, removing Administrative designations like Head, Dean, Director, Vice-Chancellor, Pro-Vice Chancellor or Rector, Proctor, Chief Proctor etc. from all the disciplines
4. Add all these numbers of teachers to get total teachers T.
5. Write all these numbers of teachers (T) in a file for the HEO with filtered ID.

(c) For S&T students S_{ST}

1. Go to DCF-I Block IE.
2. Filter for ID's of a given type of HEO's
3. First filter the levels (i.e. the PG, M.Phil., Ph.D., Integrated PG, Integrated Ph.D. etc.) to be included in this project.
4. Filter the Programme (Degree) i.e. include only the Science & Technology related PG and higher degrees.
5. Filter disciplines retaining now S&T disciplines.
6. Write all these numbers of Students S_{ijlk} for the jth HEO in lth discipline for the kth gender in an EXCEL file for the HEO with the filtered ID. All these are added to give S&T students S_{ST}, bifurcated as Males and Females.

(d) For Ph.D. students S_{RES}:
Steps 1 to 5 in (c) are to be followed by going to Block 1E.
Step 6 Separate out numbers of Ph.D., and Integrated Ph.D. and add these to get S_{RES}.

(e) For S&T Teachers N_{ST} Steps 1 and 2 in (c) are to be followed by going to Block ID.

3. Filter 'Designation' to retain all the categories of teachers, leaving the Administrative positions (like Head, Dean, Director, Vice-Chancellor, Pro-Vice Chancellor or Rector, Proctor, Chief Proctor etc.)
4. Filter by Department name to choose the S&T disciplines considered in Table 1.5 and 1.5(a) of this project.
5. Write all these numbers of Teachers Tijlk for the jth HEO in lth discipline for the kth gender in an EXCEL file for the HEO with the filtered ID. Add all these number of teachers to get $N_{ST,}$ bifurcated in Males and Females.

(f) For S&T Assistant Professors N_{AS}, Associate Professors N_{AP} and Professors N_{PR}:
Steps 1 to 5 in (e) are to be followed by going to Block 1D. Count number of Assistant Professors (N_{AS}), Associate Professors (N_{AP}) and Professors (N_{PR}) while finding N_{ST} from the S&T disciplines retained in step 5.

6. Write N_{AS}, N_{AP} and N_{PR} as in step 5 above.

3.2.2 Extraction of Expenditure Data:

For all the financial data one has to search DCF-I Block IG. Sometimes, for those ID's where S&T teachers' and students' data are available and, therefore, such ID's are to be considered in the present study; the expenditure entries are found blank.

In such a case **report 62 of Report folder** of AISHE data base (see structure of AISHE Database in Chapter 1) has been searched and many needed expenses columns of Block IG, could be filled up in our extracted data table.

Table 3.1 (A) and (B) give the format of the EXCEL files for computation of the required estimates to meet the objectives.

3.3 Deleted ID's from Extracted S&T Data

As mentioned in 3.2.1 (c) & (e) **students and teachers of such HEO's are not included as S&T manpower (or head count)**, where there is (i) no S&T discipline or (ii) where there is only UG in S&T disciplines or (iii) there is no S&T student data in Block IE or (iv) there is no S&T teachers' data in Block 1D or (v) there is no finance data ; **for all the five years 2011 to 2015.**

All such HEO's are deleted from the data extraction table.

Table 5.1 gives the numbers of S&T HEO's which have been deleted, possible reason(s) of their deletion being mentioned above. This table has been prepared HEO's type wise and year wise. Last column of this table gives the number of HEO's **type wise and year wise which remain for all the computations.**

The last column of the Table 5.1 is especially useful will be evident from the following observations:

The names of the following three HEO's of Deemed University: Government Aided type

(i) Indian Law Institute, Bhagwandas Road, New Delhi (ID: 103)
(ii) Gokhale Institute of Politics and Economics, Pune (ID: 303) and
(iii) Bhatkhande Music Institute, Lucknow (ID: 501)

indicate that S&T disciplines are not likely to be present in them.

However, it is not a universal truth.

(i) Tamilnadu Physical Education and sports university, Chennai (ID: 486) and
(ii) Atal Bihari Vajpai Hindi Vishwavidyalay (ID: 651)

have S&T disciplines, though the names give the impression that S&T disciplines do not exist in these two.

Chapter 4. Missing Data Handling

Chapter 3 has dealt with process of data extraction to enable computing all the required estimates formulated in Chapter 2 Methodology. In the previous four years ie. 2011 to 2014, the students' and teachers' data was not extracted discipline and gender wise. Estimating the **Manpower (or total head counts), FTE and SERD** in S&T disciplines and gender-wise and the **expenditure on R&D activities** with the said data tables with many missing values is not proper.

The missing data adjustment, in the last four year study, was done without considering their discipline and gender, using the policy mentioned in Chapter 4 of the FTR of November 2016. Now the current 2011 to 2015 data is extracted on S&T students, S&T teachers discipline and gender wise and finance data. This also has many missing values.

Therefore, in this chapter the technique adopted for handling missing students' and teachers' discipline and gender wise data is discussed.

Some policies are similar to those adopted in earlier four years and mentioned in Chapter 4 of the completed report. The present policy considering the discipline and gender- wise computation using Students and Teachers is described in this chapter.

The policy for adjusting missing finance data is similar to that mentioned in the said completed report in November 2016.

But the adjustment of missing values on students and teachers in the five years 2011 to 2015 has been done following different policy than that applied in the last four years.

4.1 Method of Handling Missing Data on Expenses

Looking at the extracted data tables on Expenses it was given serious thought on devising some methods of replacing a missing value by some logical and properly justified estimate.

It is observed that the nature of HEO's differ from one to other, even if they are in the same type of HEO. The difference may be in the number of enrolled students and the number of teachers working in the HEO's. Hence a missing expenditure, on any of four considered expenses cannot be replaced by the average value of the same item of expenses, in that table as they are for other HEO's.

These being of different nature, the averaging over HEO's is not admissible i.e. substituting by average of available values of expenses in a column any one or more of the missing expenses in the table of any type of HEO's is not advisable.

Before giving the present policy for adjustment of missing data, it would be proper to mention the reasons, if an HEO is deleted from the extracted data and not considered for computation of any of the estimates. It is given below in Section 4.1.1.

4.1.1 Deleted ID's from Estimation of Manpower, FTE, ERD and SERD

As mentioned n Section 3.3 an ID is deleted before computation of estimates if for all the five years 2011 to 2015:

(a) there is no S&T discipline in the corresponding HEO or
(b) there is only UG in S&T disciplines, or
(c) there is no S&T students' data in Block 1E, or
(d) there is no S&T teachers' data in Block 1D, or
(e) there is no finance data in Block 1G

Table 5.1 gives the number of S&T HEO's which have been deleted due to one or more of the above reasons. Table is prepared HEO's type wise and each of the five study year-wise. Last column of this table gives the number of HEO's type wise and year-wise which remain for all the computations.

4.1.2 Adjustment of Missing Expense

In view of above observations, policy adopted for any missing value of expenses is as follows:

(a) Each type of HEO's table is to be considered separately.
   (i) If any given item's expense is missing for one, two, three or four of the five years 2011-12 or in 2012-13 or in 2013-14 or in 2014-15 or in 2015-16, it has been replaced by the average expense on the same item in the rest of the years for the same HEO i.e. of same ID.
   For example suppose 'RACT' value is missing in 2012-13 for an ID say xyz, then it will be replaced by average of RACT values in years 2011-12, 2013-14, 2014-15 and 2015-16 for the same ID, xyz.

   In symbols

   $$\textbf{Missing } RACT_{12} = (RACT_{11} + RACT_{13} + RACT_{14} + RACT_{15})/4 \qquad (4.1)$$

   (ii) If any given item's expense is missing for any four years, then the one year available value replaces the rest four years' missing values.

   Thus suppose RACT is not available for 2012-13, 2013-14, 2014-15, 2015-16 for ID say xyz, but is available for 2011-12. Then the value $RACT_{11}$ for ID xyz will replace the not available values of ID xyz in the said four years.

   In symbols

   $$\textbf{Missing } (RACT)_{12} = (RACT)_{11} = \textbf{Missing } (RACT)_{13} = \textbf{Missing } (RACT)_{14} = \textbf{Missing } (RACT)_{15} \qquad (4.2)$$

(b) If some expense item is missing for all the five years 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16 then there is no way of adjusting such '0' (zero) values by any method.

Hence such missing values are ignored in computing the required estimates.

4.1.3 Adjustment of Missing Number of Teachers and / or Students

(i) The same policy as in 4.1.1 for expense values is also adopted for missing values of total number of teachers and / or total number of students. Hence the values of S, S_{ST}, T, N_{ST} are adjusted following the policy mentioned in (a) above.

(ii) Adjustment of S&T students level and discipline wise and of S&T teachers, category wise is not possible if S_{ST} (total S&T students}, and N_{ST} (total S&T teachers} values are not available for all the five years.
It may be noted that in such case of missing N_{ST} and S_{ST} while calculating expenses on R&D activities, the proportions P_{ST}, P_{SS} and P_{NTS} become '0', hence the estimate of expenditure on R & D activities cannot use the values of expenses, even if available.
It was, therefore, decided that such ID's should be deleted from the extracted data tables of students, teachers as well as on expense.

(iii) While adjusting missing S_{ST}, S_{RES}, $N_{ST,}$ $N_{pr,}$ $N_{ap,}$ and N_{AS} one should observe that the adjusted values of the said 6 items should be consistent with available values of S, S_{ST}, T and $N_{ST,}$ respectively, in other years.

The adjusted values of S_{ST}, S_{RES}, and also PG M Phil and Integrated students and N_{ST}, N_{PR}, N_{AP} and N_{AS} , should all be consistent with the available values of these.

(iv) If all three viz. Students, Teachers and Finance data are not available for initial years 2011, 2012,2013 and 2014, then such IF's will also be deleted in those years

(v) If finance data is available but students' and teachers' data is not present then students' and teachers' values will be adjusted for that ID in that year(s) from the available values in other years.

(vi) For adjusting missing data on students which are considered discipline, level and gender wise and /or on teachers which are considered discipline, category and gender wise the policy adopted is as follows:

a) If some ID's are newly added, its data will not be used for adjustment in previous years.

b) If an ID is added newly and is also closed in subsequent year(s), no adjustment will be done in previous and/or following years.

c) If either students' data or teachers' data are not available for all the five years 2011 to 2015 for any HEO, this will not be included in computations

d) Policy of missing data adjustment for students:, disciplines, levels and gender wise adopts the following **three** steps:

It may be noted that the number of Broad disciplines (as shown in Table 1.5 and 1.5(a) in any ID may be from 1 to 9. In various ID's the number of Disciplines also vary in any Broad Disciplines.

It is also possible that with varying year (2011-2015) the number of Broad Disciplines may vary in an HEO, and also the number of Disciplines. So while adjusting the students' and/or teachers' data which is missing in one or more (<5) years, the Broad Disciplines (**BD's**) and Disciplines (**D's**)are also decided as the largest possible number of BD's and/or D's in the other years in which Students' and/or teachers' data are available.

1st step

(i) Find sum of number of students (Male and Female) available in various years in the decided Broad Disciplines (= BD^{S}_{m} m=1,2,3,…….9)

(ii) Check, BD =$\sum BD^{S}_{m} = S_{ST}$ for that ID

(iii) Proportionally divide BD = S_{ST} in various decided BD's for male and female students separately.

(iv) Enter these in place of missing number of male and female students in BD's of 1 or 2 or 3 or 4 years.

2nd step

Now for each BD the total number of students in it - BD^{S}_{m} is to be divided proportionally in various disciplines. For this find the total number of available students in various disciplines of considered BD. Enter the proportionally divided number of students in missing years (1 or 2 or 3 or 4) in various disciplines of the considered BD.

3rd step

Similar procedure (that is proportional division) will be applied by dividing the entered number of male and female students in a discipline in a year in the 4 levels (PG, M Phil, PhD and Integrated) in proportion to the available number of level wise students.

Since the students' and teachers' data is already available gender wise, the procedure of proportional division results in gender wise adjustment of missing values of students and teachers in various disciplines.

*The above procedure will be applied for missing teachers' data. Only difference being that instead of **four** levels of students, there are only three categories (Professor, Associate Professor and Assistant Professor) of teachers.*

4.2 Action on Missing Values for all Five Years

As there is no logical way of adjusting the values missing for all the five years, it has been mentioned in 4.1.1 (b) and in 4.1.2 (c) that such HEO's will not be included in computation of various estimates. Table 4.1 below gives the Type wise and Year wise adjusted ID's.

The Table 5.1 gives the number of S&T HEO's type wise and year wise on which computation of various estimates have been done.

Table 4.1: Type-wise and Year-wise Financial Data Adjusted Number of S&T ID's

Types ↓ Year→	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**
Type 1	[40] {19}	[40] {21}	[40] {20}	[40] {21}	[41] {21}
Type 2	[01] {0 }	[01] {0}	[01] {0 }	[01] {0 }	[01] {0}
Type 3	[72] {20}	[72] {21}	[72] {12}	[72] {07}	[74] {11}
Type 4	[31] {07}	[31] {07}	[31] {04}	[31] { 07}	[33] {05}
Type 5	[11] {0 }	[11] {0}	[11] {0 }	[10] {0 }	[10] {0}
Type 6	[4] {0 }	[4] {0}	[4] {0 }	[4] {0 }	[5] { 0}
Type 7	[210] {77}	[208] {82}	[215] {79}	[219] 73}	[219] {76}
Type 8	[72] {44}	[108] {44}	[110] {47}	[138] {58}	[173] {33}
Type 9	[13] {0 }	[13] {0 }	[13] {0 }	[13] {0 }	[13] {0 }
Type 10	[48] {29}	[50] {22}	[50] {22}	[50] {22 }	[63] {23}
Type 11	[03] {0 }	[03] {0 }	[03] {0 }	[05] {0 }	[08] {0 }

Source: DST Project 2016 Quantification of R&D Resources in Higher Education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16).

Note: Figures in [ ] are number of S&T HEO's and in { } are number of adjusted S&T HEO's

Chapter 5. Computations

In Chapter 2. Methodology, all the expressions to determine the required estimates as mentioned in objectives I, II, III (a) and (b) have been given.

In Chapter 3 the methods and/or steps are given to pick-up and prepare the data extraction files in EXCEL. As shown in Table 3.1 (A) in 21 columns and in (B) 14 columns of such files (prepared for each of the 11 types of HEO's), the required quantities (in symbols) in the expressions have been assembled, to determine the estimates for said objectives.

The students' enrollment in various Disciplines, Type-wise for all the five study years 2011 to 2015is also obtained and presented in Tables 5.6 and 5.7 in Section 5.7.

Table 5.1 brings out the fact that the listed number of HEO's in the 11 types of HEO's, which are mentioned in Table 1.2 differ from the remaining number of HEO's for many types of HEO's for the study years, 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16.

Table 5.1 below gives the summarized information about

(i) The listed number of HEO's
(ii) The number of S&T HEO's
(iii) The number of deleted HEO's due to the reasons mentioned in Section 4.2
(iv) The remaining number of HEO's, after deletion of some ID's of HEO's for each of the 11 types of HEO's in each of the five study years i.e. 2011-12, 2012-13, 2013-14,2014-15 and 2015-16. The four reasons leading to deletion of any HEO is also given in Section 3.3 of Chapter 3.

As mentioned in Chapter 4, some of the ID's in the resulting files after deleted number of ID's, did not have data in all the columns for each of the five years considered in this study. Hence following the missing data handling procedure mentioned in Chapter 4, all possible missing values in the extracted data EXCEL files have been replaced by appropriate values, as mentioned in Sections 4.1.1 and 4.1.2.

The estimates are from the lesser number of HEO's in each of 11 types of HEO's than the total S&T HEO's. These are based on the remaining numbers of S&T HEO's shown below in Table 5.1.

Table 5.1. Total number of Listed, HEO with S&T, Deleted and Remaining Higher Education Organization (HEOs)by their Types and Year

Type of HEO's	Years	Listed # of HEO's	Total # of S&T HEO's	# of Deleted S&T HEO's	Total # of Remaining HEO's
Type 1	2011-2012	42	40	0	40
	2012-2013	42	40	0	40
	2013-2014	42	40	0	40
	2014-2015	43	40	0	40
	2015-2016	43	40	0	40
Type 2	2011-2012	1	1	0	1
	2012-2013	1	1	0	1
	2013-2014	1	1	0	1
	2014-2015	1	1	0	1
	2015-2016	1	1	0	1
Type 3	2011-2012	79	72	7	65
	2012-2013	80	72	7	65
	2013-2014	80	72	7	65
	2014-2015	79	72	6	66
	2015-2016	79	74	7	67
Type 4	2011-2012	38	27	2	25
	2012-2013	36	27	2	25
	2013-2014	36	27	2	25
	2014-2015	36	27	2	25
	2015-2016	32	30	5	25
Type 5	2011-2012	11	11	0	11
	2012-2013	11	11	0	11
	2013-2014	11	11	0	11
	2014-2015	11	11	1	10
	2015-2016	11	11	1	10
Type 6	2011-2012	5	4	1	03
	2012-2013	5	4	0	04
	2013-2014	5	4	0	04
	2014-2015	5	4	0	04

	2015-2016	5	5	1	04
Type 7	2011-2012	286	210	1	209
	2012-2013	292	208	0	208
	2013-2014	309	215	0	215
	2014-2015	316	219	0	219
	2015-2016	329	219	0	219
Type 8	2011-2012	105	72	3	69
	2012-2013	122	108	10	98
	2013-2014	149	110	4	106
	2014-2015	181	138	0	138
	2015-2016	197	173	30	143
Type 9	2011-2012	13	11	9	2
	2012-2013	13	13	11	2
	2013-2014	13	13	11	2
	2014-2015	13	13	11	2
	2015-2016	13	13	11	2
Type 10	2011-2012	59	48	00	48
	2012-2013	62	50	00	50
	2013-2014	68	50	00	50
	2014-2015	69	50	00	50
	2015-2016	75	63	01	62
Type 11	2011-2012	3	3	01	2
	2012-2013	3	3	01	2
	2013-2014	3	3	01	2
	2014-2015	5	5	02	3
	2015-2016	13	8	04	4

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15, 2015-16).

5.1 Estimated Manpower Engaged in S&T Activities

On the basis of the remaining number of HEO's in each of the 11 Types of HEO's, the Manpower are given Broad Discipline and gender wise in Table 5.2A(in Appendix) for each of the five study years.

(A) Type wise, and gender wise summary of this i.e. Manpower is given below in Table 5.2 for all the five study years 2011 to 2015, for all the 11 types of HEO's. It also gives Manpower for all the 11 Types Combined. The same is given in Table 3 in Executive Summary.

The discipline wise, gender wise results for all the 11 types, as well as for all 11 Types Combined for all the five study years 2011 to 2015 are given in Table 5.2 d in the CD.

Table 5.2: Estimated Manpower (*Head Counts) in S&T* Disciplines: Type, Year and Gender- Wise

		2011-12 Manpower			2012-13 Manpower		
S. no.	**↓Type**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
1.	**Central Universities**	27942	10012	37954(40)	30408	11446	41854 (40)
2.	**Central Open Universities**	155	60	215(1)	185	75	260(1)
3.	**Deemed Universities Pvt.**	72127	31456	103583 (65)	80311	34679	114990 (65)
4.	**Deemed Universities Govt.**	14293	3380	17673 (25)	16509	4197	20706 (25)
5.	**Deemed Universities Govt. Aided**	8379	3936	12315 (11)	8370	3734	12104 (11)
6.	**Inst. Under Legislature Act**	886	308	1194 (3)	954	269	1223 (4)
7.	**State Public University**	132439	57005	189444 (209)	151769	67118	218887 (208)
8.	**State Private University**	29936	11903	41839 (69)	53167	19139	72306 (98)
9.	**State Open University**	46	16	62(2)	44	15	59(2)
10.	**Inst. of National Importance**	44615	9117	53732 (48)	60840	12173	73013 (50)
11.	**Others**	448	148	596(2)	540	178	718(2)
	Combined Total	**331266**	**127341**	**458607 (475)**	**403097**	**153023**	**556120 (506)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12,2012-13, 2013-14, 2014-15 and 2015-16).

Note:1. Figures in ( ) are the number of S&T HEO's type and year wise, contributing to various Estimates

2. Computed from equations (2.1),(2.2),(2.3) in Chapter 2.

Table 5,2 Contd.

		2013-14	Manpower		2014-15	Manpower	
S. no.	**↓Type**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
1.	**Central Universities**	37404	14339	51743(40)	40248	15663	55911 (40)
2.	**Central Open Universities**	96	38	134(1)	100	42	142(1)
3.	**Deemed Universities Private.**	79085	34431	113516 (65)	75202	32066	107268 (66)
4.	**Deemed Universities Govt.**	15846	3820	19666 (25)	18658	4986	23644 (25)
5.	**Deemed Universities Govt. Aided**	8407	3748	12155 (11)	8258	4078	12336 (10)
6.	**Inst. Under Legislature Act**	1325	394	1719 (4)	1336	371	1707 (4)
7.	**State Public University**	175076	80911	255987 (215)	179632	83603	263235 (219)
8.	**State Private University**	56887	20514	77401 (106)	56700	21696	78369 (138)
9.	**State Open University**	59	19	78(2)	45	20	65(2)
10.	**Inst. of National Importance**	70660	15314	85974 (50)	77250	16831	94081 (50)
11.	**Others**	183	84	267(2)	1045	391	1436(3)
	Combined Total	**445028**	**173612**	**618640 (521)**	**458474**	**179747**	**638221 (558)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12,2012-13, 2013-14, 2014-15 and 2015-16).

Note:1. Figures in () are the number of S&T HEO's type and year wise, contributing to various Estimates
2.Computed from equations (2.1), (2.2), (2.3) in Chapter 2.

Contd.

Table 5.2 Contd.

2015-16 Manpower

S. no.	↓Type	Male	Female	Total
1.	Central Universities	38432	14873	53305(40)
2.	Central Open Universities	105	44	149(1)
3.	Deemed Universities Pvt.	64084	29220	93304 (67)
4.	Deemed Universities Govt.	19428	5430	24858 (25)
5.	Deemed Universities Govt. Aided	3613	1596	5209 (10)
6.	Inst. Under Legislature Act	1096	318	1414 (4)
7.	State Public University	166943	84362	251305 (219)
8.	State Private University	46890	17934	64824 (143)
9.	State Open University	41	27	68(2)
10.	Inst. of National Importance	84280	19045	103325 (62)
11.	Others	425	192	617(4)
	Combined Total	**425337**	**173041**	**598378 (577)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12,2012-13, 2013-14, 2014-15 and 2015-16).

Note:1. Figures in () are the number of S&T HEO's type and year wise, contributing to various Estimates
2.Computed from equations (2.1), (2.2), (2.3) in Chapter 2

(B) For computing Estimated Full Time Engagement (FTE) in R&D Activities in S&T Disciplines and Estimated FTE Equivalent Salary Expenditure(SERD*) in S&T* Disciplines; the numbers of three categories of teachers and of PhD and/or higher level of students (= Research Manpower in S&T)

are required. These values for each of the 11 Types of HEO's, Year and Gender wise for 2011- 2015 are given in Table 5.2a below.

Table 5.2a : Estimated Research Manpower (*Head Counts) in S&T* Disciplines: Type, Year and Gender- Wise

2011-12 Research Manpower 2012-13 Research Manpower

(in Numbers)

S. no.	↓Type	Male	Female	Total	Male	Female	Total
1.	Central Universities	5546	1478	7024(40)	11247	3321	14568(40)
2.	Central Open Universities	155	60	215(1)	165	55	220(1)
3.	Deemed Universities Pvt.	24352	9945	34297(65)	29576	11991	41567(65)
4.	Deemed Universities Govt.	6806	1569	8375(25)	8370	2015	10385 (25)
5.	Deemed Universities Govt. Aided	1836	773	2609 (10)	2426	1023	3449 (10)
6.	Inst. Under Legislature Act	344	62	406 (3)	574	133	707 (4)
7.	State Public University	25740	8882	34622(209)	25095	7527	32622 (208)
8.	State Private University	9396	3167	12563 (69)	16201	5314	21515(98)
9.	State Open University	41	14	55(2)	45	9	59(2)
10.	Inst. of National Importance	15318	3159	18477(48)	22256	4644	26900 (50)
11.	Others	41	18	59(2)	56	21	77(2)

	Combined Total	**89575**	**29127**	**118702(475)**	**116011**	**36058**	**152069(506)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16).

Note1 : Figures in ( ) are the number of S&T HEO's type and year wise, contributing to various Estimates

2 : Research Manpower in S&T disciplines includes: (i) Professors, Associate Professors and Assistant Professors of S&T disciplines.

(ii) Students of Ph.D. and Higher level in S&T disciplines. Contd.

Table 5.2a Contd.

2013-14 Research Manpower 2014-15 Research Manpower

(In numbers)

S. no.	↓Type	Male	Female	Total	Male	Female	Total
1.	**Central Universities**	12415	3867	16282(40)	11489	3391	14880(40)
2.	**Central Open Universities**	96	38	134(1)	100	34	134(1)
3.	**Deemed Universities Pvt.**	27992	11146	39138(65)	25391	9738	35129(66)
4.	**Deemed Universities Govt.**	7541	1811	9352 (25)	16509	2309	11409(25)
5.	**Deemed Universities Govt. Aided**	2436	1070	3506(10)	2694	1277	3971(11)
6.	**Inst. Under Legislature Act**	773	159	932(4)	730	128	858(4)
7.	**State Public University**	34260	10915	45175 (215)	36046	12210	48256(219)
8.	**State Private University**	18047	6437	24484(106)	22043	7399	29442 (138)

9.	**State Open University**	59	19	78(2)	43	19	63(2)
10.	**Inst. of National Importance**	27303	6312	33615(50)	29353	6791	36144(50)
11.	**Others**	85	29	114(2)	113	40	153(3)
	Combined Total	**131007**	**41803**	**172810(521)**	**137103**	**43336**	**180439(558)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16).

Note 1 : Figures in ( ) are the number of S&T HEO's type and year wise, contributing to various Estimates

2:Research Manpower in S&T disciplines includes: (i) Professors, Associate Professors and Assistant Professors of S&T disciplines. (ii) Students of Ph.D. and Higher level in S&T disciplines.

Table 5.2a. Contd

2015-16 Research Manpower (In Numbers)

S. no.	**↓Type**	**Male**	**Female**	**Total**
1.	**Central Universities**	13650	4132	17782(40)
2.	**Central Open Universities**	92	38	130(1)
3.	**Deemed Universities Pvt.**	28055	2620	40686 (67)
4.	**Deemed Universities Govt.**	9722	2620	12342(24)
5.	**Deemed Universities Govt. Aided**	3275	2047	5322(11)

6.	**Inst. Under Legislature Act**	810	152	962(4)
7.	**State Public University**	39255	15734	54989(219)
8.	**State Private University**	21301	7085	28386(143)
9.	**State Open University**	41	27	68(2)
10.	**Inst. of National Importance**	33933	7982	41915(62)
11.	**Others**	163	47	210(4)
	Combined Total	**150297**	**52495**	**202792(577)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13 , 2013-14, 2014-15 and 2015-16).

Note 1: Figures in ( ) are the number of S&T HEO's type and year wise, contributing to various Estimates

2: Research Manpower in S&T disciplines includes: (i) Professors, Associate Professors and Assistant Professor of S&T disciplines.

(ii) Students of Ph.D. and Higher level in S&T disciplines.

A description of the findings or conclusion on these estimates is provided in Chapter 6**.Findings**.

5.2 Estimated Full Time Engagement (FTE) in S&T Research Activities

Equation (2.4) defines **FTE** and (2.5) gives the formula to compute it. Following page gives the expressions for obtaining the discipline and gender wise estimates.

Table 5.3 d gives the Broad Discipline, Discipline and gender wise estimates of FTE for various types of HEO's for all the five years and also for combined Types. (given on the CD).

Table 5.3 a gives the Broad Discipline, and gender wise estimates of FTE for various types of HEO's for all the five years and also for combined Types. (given in Appendix).

Table 5.3 below gives the summary of this table i.e. the Type and gender wise FTE for each of the 11 types for each of five study years 2011 to 2015. In Executive Summary Table 4 gives the same info.

A description of the findings or conclusion about comparison of these estimates among types of HEO's and for various years is given in the next Chapter 6: **Findings**.

Table 5.3: Estimated Full Time Engagement (FTE) *in S&T* Disciplines: Type, Year and Gender- Wise

(Hours/week)

		2011-12			2012-13		
S. no.	**↓Type**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
1.	**Central Universities**	3750.35	1090.00	4840.35(40)	7375.25	2542.40	9917.65(40)
2.	**Central Open Universities**	100.75	40.6	141.35(1)	127.00	52.15	179.15(1)
3.	**Deemed Universities Private**	10732.20	4485.45	15217.65 (65)	13242.55	5651.65	18894.20 (65)
4.	**Deemed Universities Govt.**	4774.20	1222.75	5996.95 (25)	5655.05	1484.5	7139.55 (25)
5.	**Deemed Universities Govt. Aided**	1100.05	484.75	1584.80 (11)	1413.60	604.80	2018.4 (11)
6.	**Inst. Under Legislature Act**	146.95	28.90	175.85 (3)	230.40	47.20	277.60 (4)
7.	**State Public University**	17186.55	6468.00	23654.55 (209)	19015.50	6867.40	25882.90 (208)
8.	**State Private University**	3475.65	1140.35	4616.00 (69)	5744.75	1924.40	7669.15 (98)
9.	**State Open University**	23.50	7.75	31.25(2)	26.75	8.25	35.00(2)
10.	**Inst. of National Importance**	10505.10	2418.65	12923.75 (48)	15147.20	3497.40	18644.60 (50)
11.	**Others**	16.45	6.40	22.85(2)	23.05	9.50	32.55(2)
	Combined	**51811.75**	**17393.60**	**69205.35**	**68001.10**	**22689.65**	**90690.75**

	Total			**(475)**			**(506)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16).

Note:1. Figures in ( ) are the number of S&T HEO's type and year wise, contributing to various Estimates

2: FTE is calculated from number of Professors, Associate Professors, Assistant Professors and number of Research Students in S&T Disciplines.

3. Computed from equation (2.5) in Chapter 2

Table 5.3 Contd.

FTE **(Hours/week)**

		2013-14			**2014-15**		
S. no.	**↓Type**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
1.	**Central Universities**	8175.90	2980.55	11156.45(40)	7104.90	2437.15	9542.05 (40)
2.	**Central Open Universities**	38.00	15.15	53.15(1)	27.75	11.10	38.85(1)
3.	**Deemed Universities Private.**	13581.75	5608.85	19190.60 (65)	12830.10	5225.65	18055.75 (66)
4.	**Deemed Universities Govt.**	5247.15	1418.80	6665.95 (25)	6778.90	1892.45	8671.35 (25)
5.	**Deemed Universities Govt. Aided**	1347.20	566.20	1913.40 (11)	1611.90	724.15	2336.05 (10)
6.	**Inst. Under Legislature Act**	405.00	68.35	473.35(4)	420.80	64.10	484.90(4)
7.	**State Public University**	20832.80	7520.65	28353.45 (215)	21587.10	8224.35	29811.45 (219)
8.	**State Private University**	6845.25	2417.78	9263.03 (106)	8161.85	2852.45	11014.30 (138)
9.	**State Open University**	32.20	9.25	41.45(2)	23.25	9.50	32.75(2)
10.	**Inst. of National Importance**	20126.70	5192.15	25318.85 (50)	22355.25	5734.00	28089.25 (50)
11.	**Others**	40.10	15.80	55.9(2)	62.30	23.05	85.35(3)
	Combined Total	**76672.05**	**25813.53**	**102485.58 (521)**	**80964.10**	**27197.98**	**108162.08 (558)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16).

Note:1. Figures in ( ) are the number of S&T HEO's type and year wise, contributing to various Estimates

2: FTE is calculated from number of Professors, Associate Professors, Assistant Professors and number of Research Students in S&T Disciplines.

3. Computed from equation (2.5) in Chapter 2.

Table 5.3 Contd.

FTE **(Hours/week)**

		2015-16		
S. no.	**↓Type**	**Male**	**Female**	**Total**
1.	**Central Universities**	8360.45	2905.35	11265.80(40)
2.	**Central Open Universities**	28.70	11.80	40.50(1)
3.	**Deemed Universities Private**	11869.40	5053.90	16923.30 (67)
4.	**Deemed Universities Govt.**	7539.00	2200.30	9739.30 (25)
5.	**Deemed Universities Govt. Aided**	629.25	263.90	893.15 (10)
6.	**Inst. Under Legislature Act**	307.40	47.60	355.00 (4)
7.	**State Public University**	19034.45	7868.45	26902.90 (219)
8.	**State Private University**	7477.60	2598.90	10076.50 (143)
9.	**State Open University**	22.25	18.75	41.00(2)
10.	**Inst. of National Importance**	26460.45	7065.80	33526.25 (62)

11.	**Others**	95.70	26.30	122.00(4)
	Combined Total	**81824.65**	**28061.05**	**109885.70 (577)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15, 2015-16).

Note 1. Values in ( ) are number of type and year –wise HEO's contributing in various estimates (ii) computed from equations (2.6),(2.7),(2.8),(2.12),(2.16),(2.20),(2.23),(2.27) in Chapter 2

2. FTE is calculated from number of Professors, Associate Professors, Assistant Professors and number of Research Students in S&T Disciplines.

3. Computed from equation (2.5) in Chapter 2.

5.3 Estimated Expenditure on R&D Activities in Science and Technology (ERD)

As mentioned in Section 5.1, total expenditure on R&D activities is estimated using equations (2.12), (2.16), (2.20), (2.23) and (2.27). These are again based on only the number of HEO's from which estimates of Manpower in S&T activities are obtained for each of the five study years.

Apart from that, it may be recalled, as mentioned in Section 4.2, that some expenditure items are not available all five study years. Hence the HEO's with available or adjusted values only, have been used to estimate the total expenditure on R & D Activities. The total expenditure on R&D activities (**ERD**) for each of the 11 types of HEO's and also the combined estimate for all of the 11 types of HEO's.

Table 5.4 below gives the estimated **ERD** for all the 11 Types of HEO's for all the five study years 2011-12 to 2015-16. Table 5 gives the same in Executive Summary as a ready reference to main findings in the project.

A description of the findings or conclusion about comparison of these estimates among types of HEO's and for various years is given in the next Chapter 6: **Findings**.

It may be mentioned that Chapter 6 contains the diagrams (Bar-chart) also for the three estimates mentioned so far and for the last estimate of **SERD** described in the next section. These figures provide a ready reference for all the **Findings** described in Chapter 6.

Table 5.4: Expenditure on R&D Activities in Science and Technology (ERD)
Type wise and Year wise

(In Crore Rupees)

S. No.	Type of HEO ↓	2011-12	2012-13	2013 - 14	2014 -15	2015-16
1	Central University	1283.15(40)	1774.54(40)	4157.53(40)	3569.14(40)	2672.18(40)
2	Central Open University	88.12(1)	68.56(1)	89.90(1)	81.57(1)	83.71(1)
3	Deemed University Pvt.	5908.20(65)	3002.90(65)	5872.62(65)	3683.95(66)	4497.27(67)
4	Deemed University Govt.	13780.42(25)	22267.17(25)	21259.82(25)	25146.63(25)	32866.33(25)
5	Deemed Univ. Govt. Aided	207.57(11)	264.22(11)	202.42(11)	187.13(10)	141.43(10)
6	Inst. Under State Legislature Act	948.78 (3)	304.02(4)	671.24(4)	843.49(4)	501.53(4)
7	State Public University	39305.14(209)	36602.53(208)	72755.98(215)	58549.33(219)	41337.21(219)
8	State Private University	43343.39 (69)	10637.50 (98)	8089.31 (106)	8349.82 (138)	3037.34(143)
9	State Open University	5.92(2)	6.97(2)	11.93(2)	25.04(2)	25.49(2)

10	**Institute of National Importance**	4141.65(48)	4770.72(50)	6640.72(50)	9584.74(50)	5983.77(62)
11	**Others**	10.50(2)	12.41(2)	12.34(2)	5.46(3)	16.06(4)
	Combined Total	**109022.84(475)**	**79711.54(506)**	**119781.81(521)**	**110026.30(558)**	**91162.32(577)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13,2013-14, 2014-15, 2015-16).

Note :(i) Values in ( ) are number of type and year –wise HEO's contributing in various estimates
(ii) computed from equations (2.6),(2.7),(2.8),(2.12),(2.16),(2.20),(2.23),(2.27) in Chapter 2.

It may be mentioned that Chapter 6 contains the diagrams (Bar-chart) also for the three estimates mentioned so far. The last estimate of SERD is described in the next section is shown for all the Type Year wise by line diagrams. These figurers provide a ready reference for all the Findings described in Chapter 6.

5.4 The Estimated FTE Equivalent Salary Expenditure on R&D Activities in S&T Disciplines (SERD)

Objective III (b) is to estimate R&D expenditure by computing FTE equivalent salary expenses on S&T teachers and research students **(SERD)**. Equations (2.28) and (2.29) give the basic expressions for it, by introducing the discipline and gender wise number of teachers and research students in place of the corresponding subscript less terms.

Table 5.5 d gives the estimated **SERD,** discipline and gender wise for each of the 11 types of HEO's for each of the five study years 2011 to 2015. This table is given in the CD.

The Table 5.5 a gives the same info BD wise, Type, year and gender wise. It is presented in Appendix. The Table 5.5 below provides the estimated FTE equivalent salary expenditure on R&D activities in S&T disciplines -Type, Year and Gender wise. Table 6 provides the same info in Executive Summary.

A description of the findings or conclusion about comparison of these estimates among types of HEO's and for various years is given in the next Chapter 6: **Findings**.

Table 5.5: Estimated FTE Equivalent Salary Exp. (SERD) *in S&T* Disciplines: Type, Year and Gender- Wise

2011-12 **2012-13** **(In Crore Rupees)**

S. no.	↓Type	Male	Female	Total	Male	Female	Total
1.	Central Universities	198.429	48.599	247.028 (40)	241.128	46.482	287.610 (40)
2.	Central Open Universities	3.620	0.587	4.207(1)	3.423	0.917	4.340(1)
3.	Deemed Universities Pvt.	657.319	243.395	900.714 (65)	771.285	280.585	1051.870 (65)
4.	Deemed Universities Govt.	94.174	24.666	118.840 (25)	348.852	79.650	428.502 (25)
5.	Deemed Universities Govt. Aided	38.970	14.796	53.766 (10)	47.228	17.652	64.880 (10)
6.	Inst. Under Legislature Act	18.110	2.896	21.006 (3)	22.177	4.483	26.660 (4)
7.	State Public University	312.283	81.317	393.600 (209)	822.716	211.685	1034.401 (208)
8.	State Private University	239.458	74.257	313.715(69)	482.299	154.954	637.253(98)

9.	**State Open University**	0.525	0.175	0.700(2)	0.531	0.197	0.728(2)
10.	**Inst. of National Importance**	1448.96	333.058	1782.004 (48)	1563.786	349.707	1913.493(50)
11.	**Others**	1.419	.395	1.814(2)	1.780	.536	2.316(2)
	Combined Total	**3013.23**	**824.141**	**3837.394 (475)**	**4305.205**	**1146.848**	**5452.053 (506)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE Database 2011- 12, 2012-13, 2013-14, 2014-15 and 2015-16).

Note 1: Figures in ( ) are the number of S&T HEO's type and year wise, contributing to various Estimate

2. SERD includes: (i) Professors, Associate Professors and Assistant Professor of S&T disciplines.

(ii) Students of PhD or Higher level in S&T disciplines.

Table 5.5 Contd.

2013-14 SERD 2014-15 SERD

(In Crore Rupees)

S. no.	↓Type	Male	Female	Total	Male	Female	Total
1.	**Central Universities**	273.150	59.202	332.352(40)	305.023	68.879	373.902(40)
2.	**Central Open Universities**	3.630	1.408	5.038(1)	3.925	1.492	5.417(1)
3.	**Deemed Universities Pvt.**	763.767	295.901	1059.668 (65)	949.339	357.146	1306.485 (66)
4.	**Deemed Universities**			1086.630 (25)			1286.911 (25)

	Govt.	855.607	231.023		1004.568	282.342	
5.	**Deemed Universities Govt. Aided**	48.318	23.160	71.478(10)	49.172	26.395	75.567(11)
6.	**Inst. Under Legislature Act**	22.516	4.504	27.020(4)	28.040	4.025	32.065(4)
7.	**State Public University**	869.944	228.047	1097.991 (215)	982.820	277.511	1260.331 (219)
8.	**State Private University**	507.088	171.462	678.550 (106)	561.146	174.517	735.663 (138)
9.	**State Open University**	0.900	0.002	.902(2)	1.041	0. 003	1.044(2)
10.	**Inst. of National Importance**	2910.086	721.214	3631.300(50)	3912.378	1002.125	4914.503(50)
11.	**Others**	1.922	0.511	2.433(2)	2.123	0.598	2.721(3)
	Combined Total	**6256.928**	**1736.434**	**7993.362 (521)**	**7799.575**	**2195.034**	**9994.609 (558)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011- 12, 2012-13, 2013-14, 2014-15 and 2015-16).

Note1: Figures in ( ) are the number of S&T HEO's type and year wise, contributing to various Estimates

2: *SERD includes: (i) Professors, Associate Professors and Assistant Professor of S&T disciplines.*

(ii) Students of PhD or Higher level in S&T disciplines.

Table 5.5 Contd.

2015-16

SERD **(In Crore Rupees)**

S. no.	↓Type	Male	Female	Total
1.	Central Universities	335.178	78.233	413.411(40)
2.	Central Open Universities	3.927	1.606	5.533(1)
3.	Deemed Universities Pvt.	1537.041	673.389	2210.430(67)
4.	Deemed Universities Govt.	1642.86	496.322	2139.182(24)
5.	Deemed Universities Govt. Aided	55.324	34.040	89.364(11)
6.	Inst. Under Legislature Act	28.200	5.164	33.364(4)
7.	State Public University	980.461	292.042	1272.503(219)
8.	State Private University	568.271	170.805	739.076 (143)
9.	State Open University	1.164	0.006	1.170(2)
10.	Inst. of National Importance	4173.731	1052.366	5226.097(62)

11.	**Others**	2.562	.705	3.267(4)
	Combined Total	**9382.719**	**2804.678**	**12133.397 (577)**

Source: DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE Database 2011- 12, 2012-13, 2013-14, 2014-15 and 2015-16).

Note1: Figures in ( ) are the number of S&T HEO's type and year wise, contributing to various Estimates

2: *SERD includes: (i) Professors, Associate Professors and Assistant Professor of S&T disciplines.*

(ii) Students of PhD or Higher level in S&T disciplines.

It may be mentioned that Chapter 6 contains the diagrams (Bar-chart) on these estimates also, providing a ready reference for the **Findings** mentioned in Chapter 6

5.5 Formula used for computing the Estimates from Data Extracted Files in EXCEL

Chapter 2 Methodology contains all the expressions needed to obtain all the estimates for objectives I, II, and III (A) and (B).

5.5.1 Computations for Objective I

The Manpower (or Total head counts)

It is straight forward addition of the discipline and gender wise values of S&T students and teachers extracted in columns 5 & 7 of Table 3.1 (B). These two columns' totals give the estimate of Manpower (or total head counts) engaged in S&T activities, discipline and gender wise. This is given in Table 5.2.

Table 5.2a contains the Research Manpower obtained from same tables mentioned above.

5.5.2 Computation for Objective II

The Full Time Engagement (FTE) in S&T Research Activities

Expression for calculation of FTE is given in **Chapter 2. Methodology** in equation (2.5). The following formulae have been applied on the extracted data file in EXCEL.

(i) S_{RES} = Column 10 + Column 11 of Table 3.1 (A)

(ii) 0.35 x Column 7 value of Table 3.1(B) to be added to (i)

(iii) 0.10 x Sum of columns 14 and 15 of Table 3.1(A) to be subtracted from sum of (i) and (ii)

For gender wise values one of the columns in (ii) and (iii) are to be used. The discipline is in the row.

The estimated **FTE** are shown in Table 5.3.

5.5.3 Computation for Expenditure on R&D Activities in Science and Technology

The following formulae have been applied on the extracted data file in EXCEL

(i) $P_{SS} = S_{ST}/S$ entered in column 8 of Table 3.1(B) .

(ii) $P_{ST} = N_{ST}/T$ entered in column 9 of Table 3.1(B).

(iii) S+T is sum of columns 4 and 6 of Table 3.1(B) entered in a fresh column 15.

(iv) $S_{ST}+N_{ST}$ sum of columns 5 and 7 of Table 3.1(B) entered in a fresh column.

(v) $P_{NTS} = (S_{ST}+N_{ST})/(S+T)$ = Column 15/ Column 16 entered in a fresh column.

(vi) ERDT(1) = P_{ST} x Salary
= Aj entered in a fresh column.

(vii) ERDS(1) = P_{SS} x Scholarship
= Bj entered in a fresh column.

(viii) ERDT(2) + ERDS(2) = P_{NTS} x (LILB+RACT)
= Cj entered in a fresh column.

(ix) ENTS = P_{NTS} x Salary

= Dj entered in a fresh column.

Sum of these i.e $\sum_{j=1}^{ni}$ Aj , $\sum_{j=1}^{ni}$ Bj , $\sum_{j=1}^{ni}$ Cj , and $\sum_{j=1}^{ni}$ Dj .gives the estimate of expenditure on R&D activities in S&T to achieve objective III(a).

Table 5.4 gives the required estimates of expenditure on R&D activities in Science and Technology, HEO's type- wise for each of the five study years.

5.6 Some Remarks and Calculation of FTE Equivalent Salary Expenditure on R&D Activities in S&T Disciplines (SERD)

The R & D Expenditure in S&T disciplines for all the Indian HEO's, computed from the AISHE database have been shown in Table 5.4. Through this we attempt to detect, if the Manpower and the said R&D expenses computed have stabilized with passage of five years' time.

Because of the questionable authenticity of financial data in AISHE Data Base we obtain the FTE equivalent salary expenditure on R&D expenditure in S&T, by computing it from the 'Average Pay' of the three categories of S&T teachers. Hence, the number of three categories of teachers (1.Professors or equivalent, 2. Associate Professors/ Readers/ Lecturers (Sr. Grade) and 3. Assistant Professors/Lecturers) have been extracted from AISHE database for our project. The FTE equivalent salary expenditure on R&D activities in S&T disciplines (SERD) has been calculated discipline and gender wise, using equation (2.28) and (2.29).

****** An Important Observation about ERD and SERD:**

Most of the values of ERD for an HEO are larger than the corresponding values of SERD. It may be noted that ERD values include expenses on Research Activities (RACT} and expenses on 'library and laboratory' (LILB) also apart from the salary and scholarship . SERD values (FTE equivalent salary) include only, Salary paid to S&T teaching staff (= N_{st} extracted from AISHE database) according to VI Pay Commission average monthly salary paid to them (category wise) and scholarship paid to Research students .

This seems to be the reason of difference between ERD and SERD values (given in Tables 5.4 and 5.5, respectively)

Line diagram showing FTE Equivalent Salary Expenditure on R&D Activities in S&T (SERD) for each type of HEO, and of **Combined 11 types** are given in **Chapter 6: Findings.**

5.7 Disciplines with High Students' Enrolment

It is evident from Tables 1.5 and 1.5(a) that the total number of disciplines (or subjects) are very large. Initially the selected disciplines were only 89, but while extracting discipline wise data on number of students and teachers, many more S&T disciplines have been detected. These have been clubbed with the 89 earlier and 3 new Disciplines, given in Table 1.5a.

It is interesting to know if students have any preferred for disciplines. If they have there will be large enrolment in the preference disciplines. To identify the disciplines which are more

preferred, the percentage P, of students' enrolments is computed for each of the 92 disciplines in each of the five study years. 2011-12 to 2015-16.

The number of students' enrolment in each discipline in each of 11 type of HEO's are determined in each of the five study years. Table 5.6a (in Appendix) presents these numbers. Total enrolment S_D for each of the 92 disciplines is shown in last but one column. The total of S_D in the last row is S_{ST}, the total S&T enrolled students. Now the percentage(P) of enrolment in each discipline is obtained as

$$\mathbf{P=(S_D/\sum_D \ S_D)*100 = (S_D/S_{ST})*100} \quad (5.1)$$

Table 5.6 (In Appendix) gives the Students' Enrolment Type wise and Year wise in various disciplines.

5.7.1. Groups of Disciplines with High Enrolment Percentage

After obtaining Percentage (P) of students' enrolment in each of the 92 disciplines in the five study years, the groups of disciplines are classified into four classes in Table 5.7 below for each of the five study years.

Table 5.7: Various Disciplines According to Percentage of Students' Enrolments Year wise

2011-12			
5%<P≤ 10.5%	**2%≤P<5%**	**1%≤P<2%**	**P<1%**
20,28, 29,71, 78,80(6)	1,10,12,13,1 5,17,36,59,7 0,83,92(11)	9,50,67,68 ,69,73,75, 77,82,85 (10)	2,3,4,5,6,7,8,11,14,16,18,19,21,22,23,24,25,26,27,30,31,32,33,34, 35,37,38,39,40,41,42,43,44,45,46,47,48,49,51,52,53,54,55,56,57, 58,60,61,62,63,64,65,66,72,74,76,79,81,84,86,87,88,89,90,91(65)
2012-13			
5%<P≤ 10.5%	**2%≤P<5%**	**1%≤P<2%**	**P<1%**
10,71, 78,80, 90(5)	1,12,13,15,1 7,26,28,29,3 6,59,70,83, 92 (13)	9,50,67,68 ,73,75,77, 82,85 (9)	2,3,4,5,6,7,8,11,14,16,18,19,20,21,22,23,24,25,27,30,31,32,33,34, 35,37,38,39,40,41,42,43,44,45,46,47,48,49,51,52,53,54,55,56,57, 58,60,51,62,63,64,65,66,69,72,74,76,79,81,84,86,87,88,89,91(65)
2013-14			
5%<P≤ 10.5%	**2%≤P<5%**	**1%≤P<2%**	**P<1%**
28(1)	10,13,20,29, 71,78,80(7)	1,9,12,15, 17,36,70,8 3,90,92(10)	2,3,4,5,6,7,8,11,14,16,18,19,21,22,23,24,25,26,27,30,31,32,33,34, 35,37,38,39,40,41,42,43,44, 45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65, 66,67,68,69,72,73,74,75,76,77,79,81,82,84,85,86,87,88,89,91(74)

2014-15			
5%<P≤ 10.5%	**2%≤P<5%**	**1%≤P<2%**	**P<1%**
10,20, 28,29, 71,78, 80(7)	1,12,13,15,17,69,70,83, 90 (9)	8,9,59,68, 73,75,77,79,82,85,92 (11)	2,3,4,5,6,7,11,14,16,18,19,21,22,23,24,25,26,27,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56, 57,58,60,61,62,63,64,65,66,67,72,74,76,81,84,86,87,88,89,91 (65)
2015-16			
5%<P≤ 10.5%	**2%≤P<5%**	**1%≤P<2%**	**P<1%**
20,28, 71,78, 80(5)	1,9,10,12,13, 15,17,29,69, 70,83,92(12)	8,59,67,68,73,75,77, 79,82,85 (10)	2,3,4,5,6,7,11,14,16,18,19,21,22,23,24,25,26,27,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56, 57,58,60,61,62,63,64,65,66,72,74,76,81,84,86,87,88,89,90,91 (65)

Note1.P is the percentage of students 'Enrolments obtained in Table 5.6.

2. () contain number of disciplines with indicated range of P.

The finding of this table are summarized in Section 6.6 of Chapter 6 and given in Executive Summary as Table 7.

Chapter 6. Findings

According to the formula and expressions given in Chapter 2**. Methodology** and in Chapter 5. **Computations**, the estimates of Total Manpower (or total head counts), Research Manpower (or total head counts), the Full Time Engagement (FTE)in R&D activities in S&T disciplines, the expenditure on R&D activities in Science and Technology (ERD), and FTE equivalent salary expenditure on R&D activities in S&T disciplines(SERD), mentioned in objectives have been obtained. After computation of these, a comparative analysis is now possible by thoroughly looking at the values of estimated Total Manpower or total head counts, Research Manpower, FTE, ERD and SERD for each of the five study years 2011 to 2015, for each of the 11 types of HEO's.

It should also be noted that the said five estimates cannot be compared in a straight forward manner.

This is due to an important fact that the number of HEO's remaining, which contribute to the five estimates for the five study years, differ among the HEO's Types and Years. Hence an appropriate comparison between obtained estimates would require that the number of HEO's also should be mentioned. Hence the Table 5.1 is again necessary, to keep in mind the remaining number of HEO's of each type before a comment on the estimates of interest (i.e. Manpower, Research Manpower, ERD, FTE and SERD) can be a valid statement.

The number of HEO's whose data is available for contributing to all the afore-mentioned five estimates are in Table 5.1 and entered in Table 5.2 along with the total head counts or Manpower for male and female. The same number of HEO's contribute to the figures of estimated FTE and SERD for male and female. Hence the contributing number of HEO's have been entered only with the said four estimates for total of males and females. Estimates of ERD are not gender wise. So the number of contributing HEO's are entered in brackets with all the estimated values.

Now the findings on objectives I and II are given in Sections 6.1 and 6.2 and on objectives III(a) and III(b) are given in Sections 6.3 and 6.4.

6.1 Manpower (or Total Head Counts) engaged in Science and Technology Activities

Total Head Counts or Manpower engaged in S&T activities (MPFT) are total of students(PG and higher levels)in S&T disciplines and of teachers engaged in S&T activities. Thus as already given in equation (2.3), the desired estimate of Manpower of i^{th} Type of HEO is given by

$$\mathbf{MPFT_i = S_{ST_i} + N_{ST_i};\quad i= 1, 2.....11} \qquad \mathbf{(6.1)}$$

The values of MPFT (= S_{ST}+N_{ST}) for the five study years for each of the 11 types of HEO are given in Table 5.2.

The values of Research Manpower include the three categories of Teachers and Ph. D and/or higher level of students. These are used for computing FTE and SERD. These are also shown in Table 5.2a.

6.1.1 Variation of Manpower (or Total Head Counts)

Contents of Table 5.2 and Bar Charts in Figures 1 to 12 show the variation of Manpower (or Total Head Counts) engaged in S&T disciplines, type and year wise. It is evident that

i. There is a steady increase in S&T Manpower in only Type 10- the Institute of National Importance. Manpower has almost doubled in 2015-16 from that in 2011-12.

ii. There appears to be no similarity in variation pattern of Manpower in the other 10 Types of HEO's.

(a) In Types 1,7 and 8 i.e. in the Central Universities, State Public Universities and State Private Universities, there is gradual increase from 2011-12 to 2014-15 and then it decreases in 2015-16.
The reason may be incomplete data uploading in 2015-16.

(b) In Type 2(Central open University) and 4 (Deemed University, Govt.), there is increase in Manpower from 2011-12 to 2012-13, then declines in2013 -14, and then keeps increasing with passing years up to 2015.

(c)In Type 3(Deemed University Pvt.) the Manpower increases from 2011 to 2012 and then keeps declining with passing years up to 2015-16.

(d) In Type 6(Institute under Legislature Act), the Manpower increases from 2011 to 2013 and then keeps declining with passing years up to2015-16. Though the number of HEO's increase from 3 in 2011-12 to 4 in 2012-13 to 2015-16.

(e) Manpower in Type 5(Deemed University Govt. Aided), decreases from 2011 to 2012, increases slowly to exceed slightly the 2011 value in 2014. After this year decreases sharply in 2015.

(f) In Types 9(State Open University), and 11(Others) Manpower first declines and then increases next year. This pattern continues every two years from 2011 to 2015.

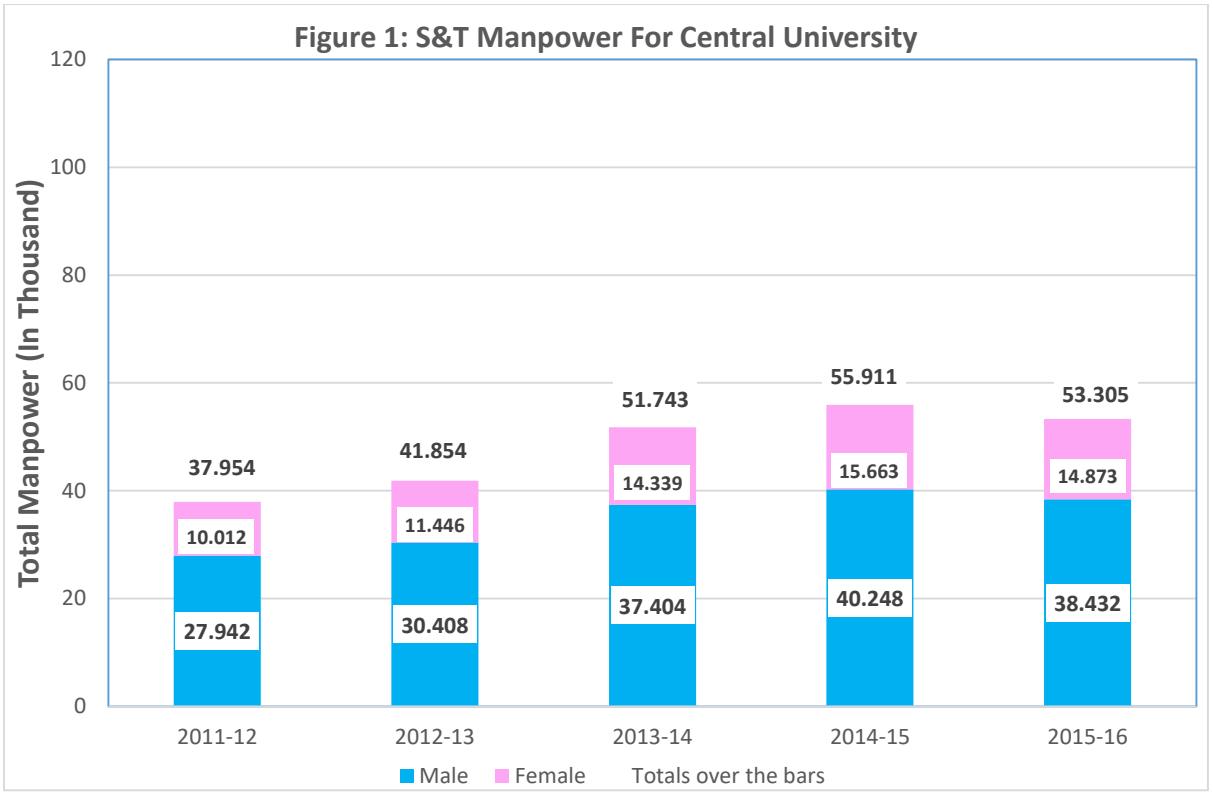


Figure 1: S&T Manpower For Central University
Total Manpower (In Thousand)
120
100
80
60
40
20
0
37.954
10.012
27.942
41.854
11.446
30.408
51.743
14.339
37.404
55.911
15.663
40.248
53.305
14.873
38.432
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Totals over the bars

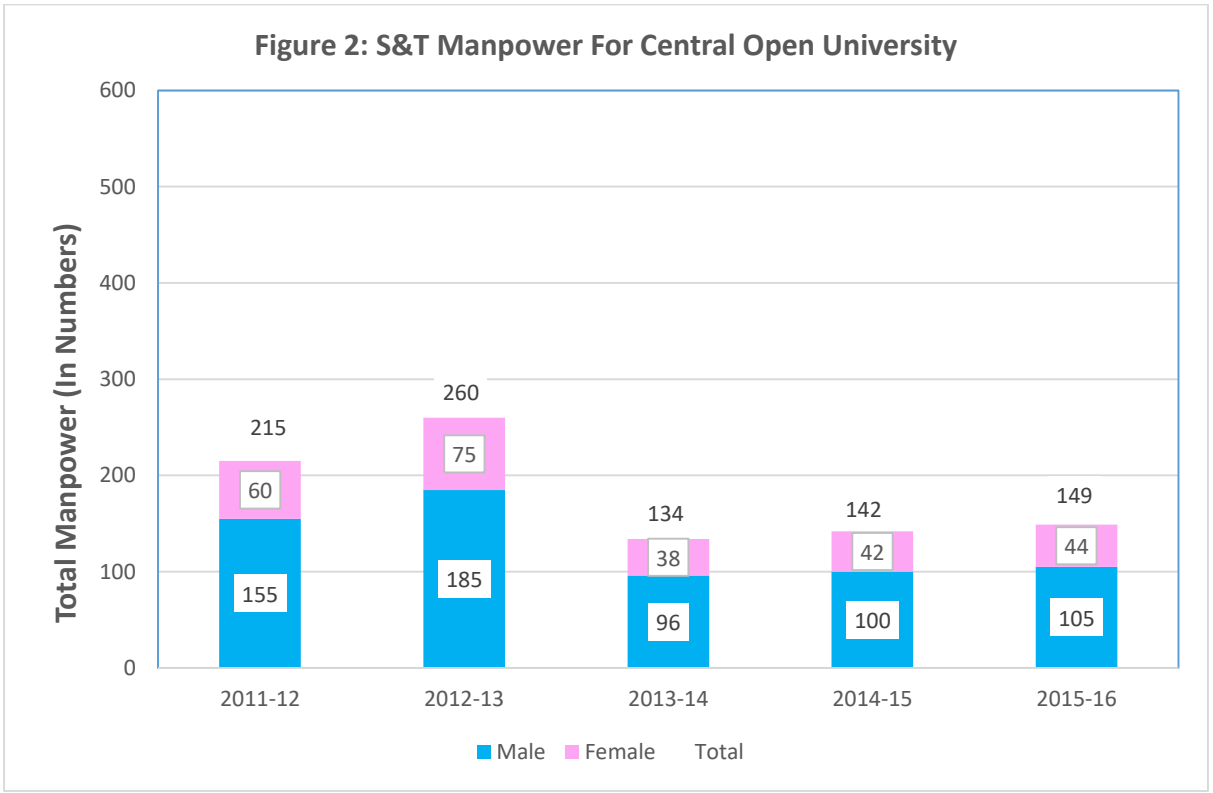


Figure 2: S&T Manpower For Central Open University
Total Manpower (In Numbers)
600
500
400
300
200
100
0
215
60
155
260
75
185
134
38
96
142
42
100
149
44
105
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Total

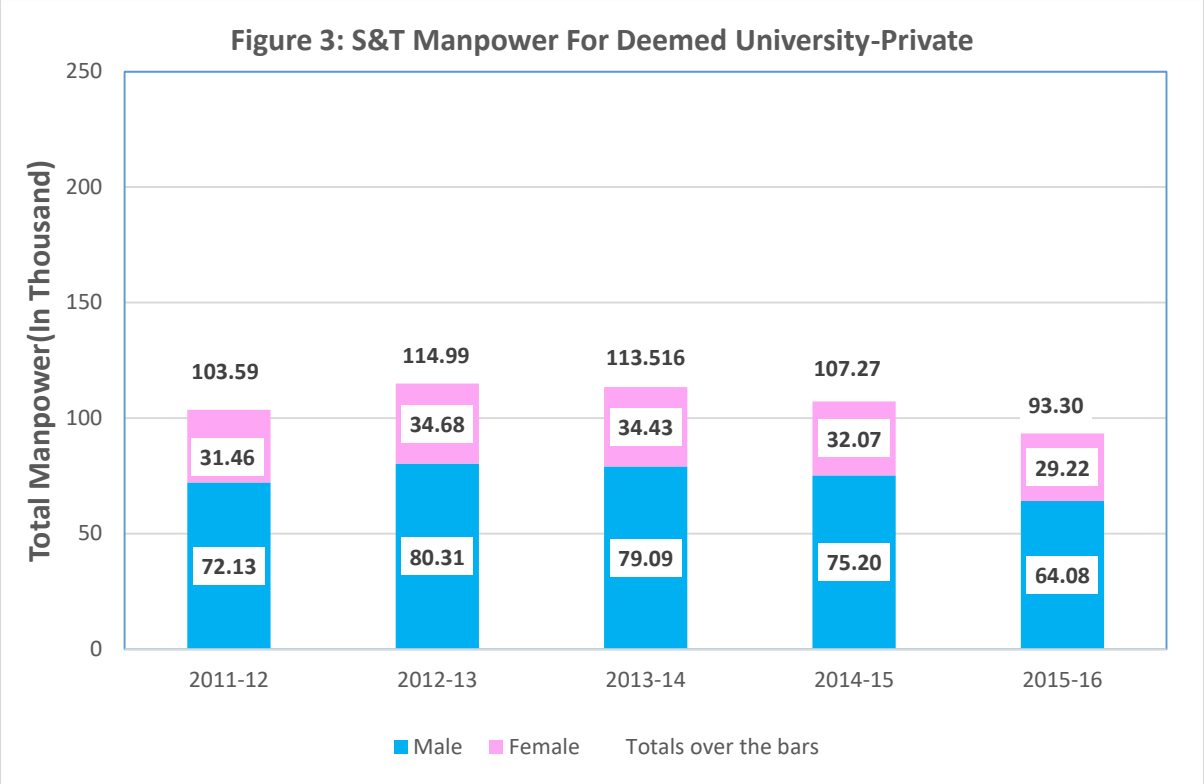


Figure 3: S&T Manpower For Deemed University-Private
Total Manpower(In Thousand)
250
200
150
100
50
0
103.59
114.99
113.516
107.27
93.30
31.46
34.68
34.43
32.07
29.22
72.13
80.31
79.09
75.20
64.08
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Totals over the bars

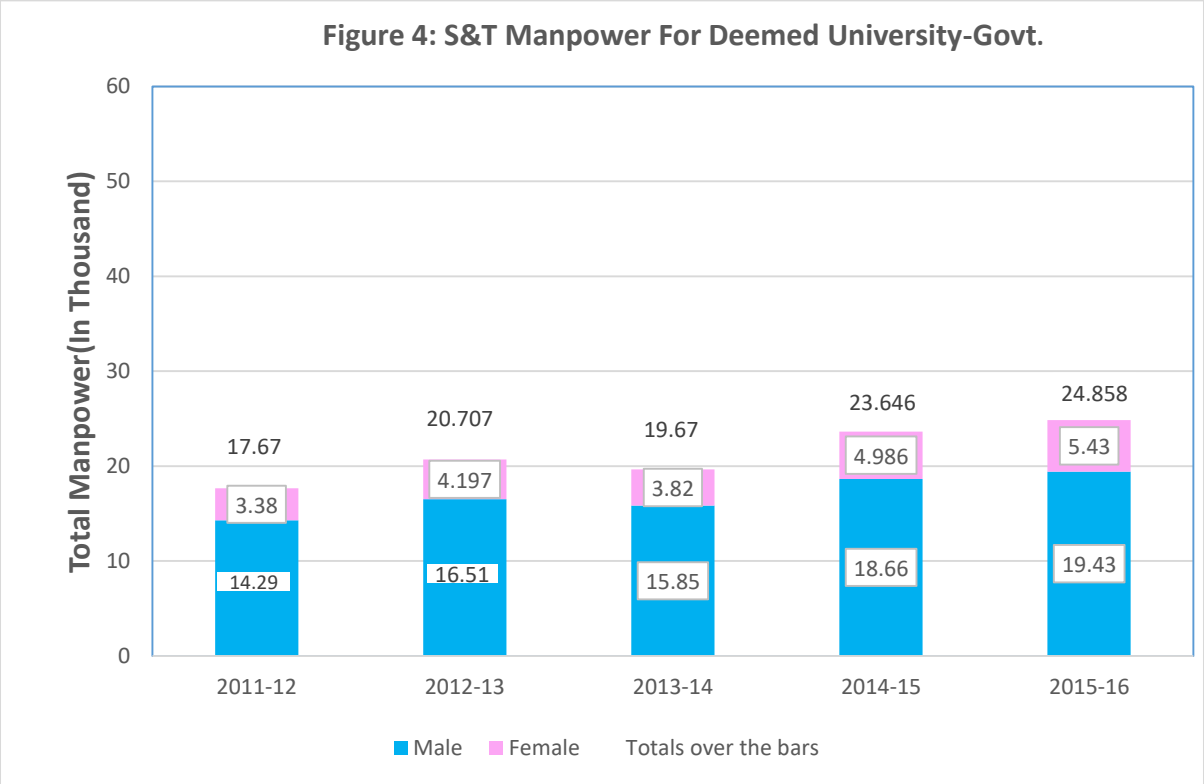


Figure 4: S&T Manpower For Deemed University-Govt.
Total Manpower(In Thousand)
60
50
40
30
20
10
0
17.67
20.707
19.67
23.646
24.858
3.38
4.197
3.82
4.986
5.43
14.29
16.51
15.85
18.66
19.43
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Totals over the bars

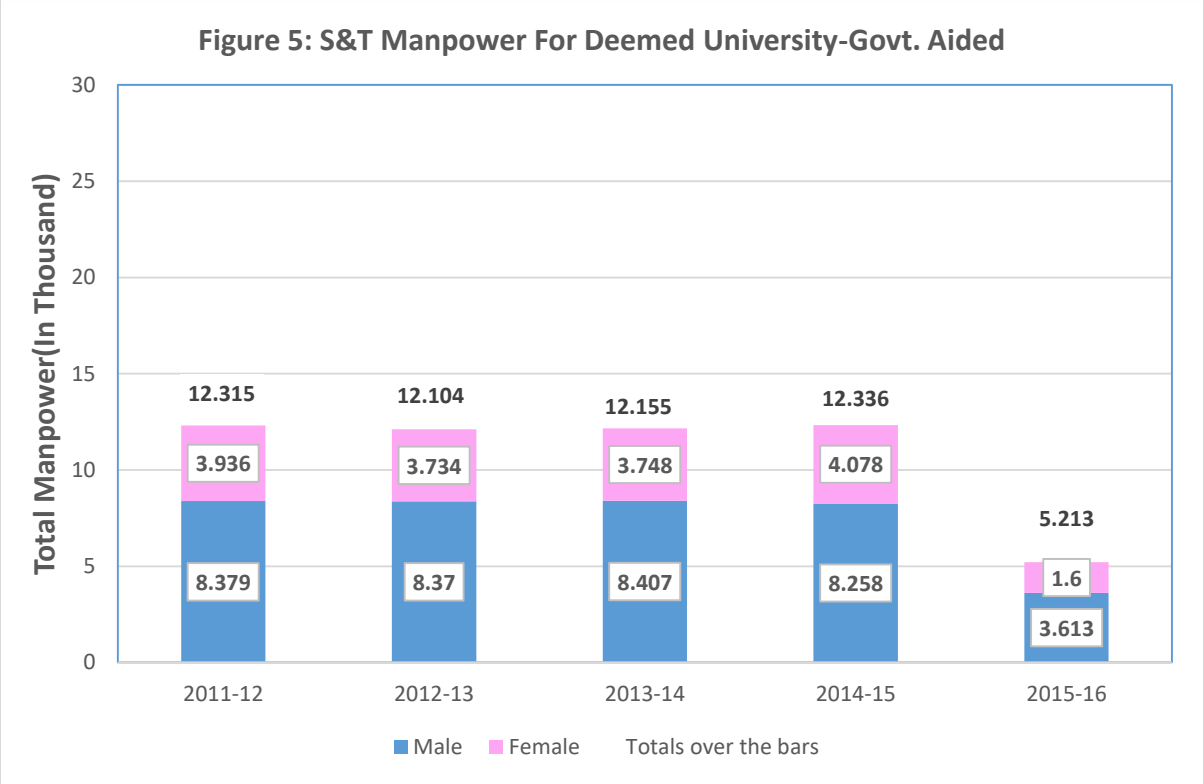


Figure 5: S&T Manpower For Deemed University-Govt. Aided
Total Manpower(In Thousand)
30
25
20
15
10
5
0
12.315
3.936
8.379
12.104
3.734
8.37
12.155
3.748
8.407
12.336
4.078
8.258
5.213
1.6
3.613
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Totals over the bars

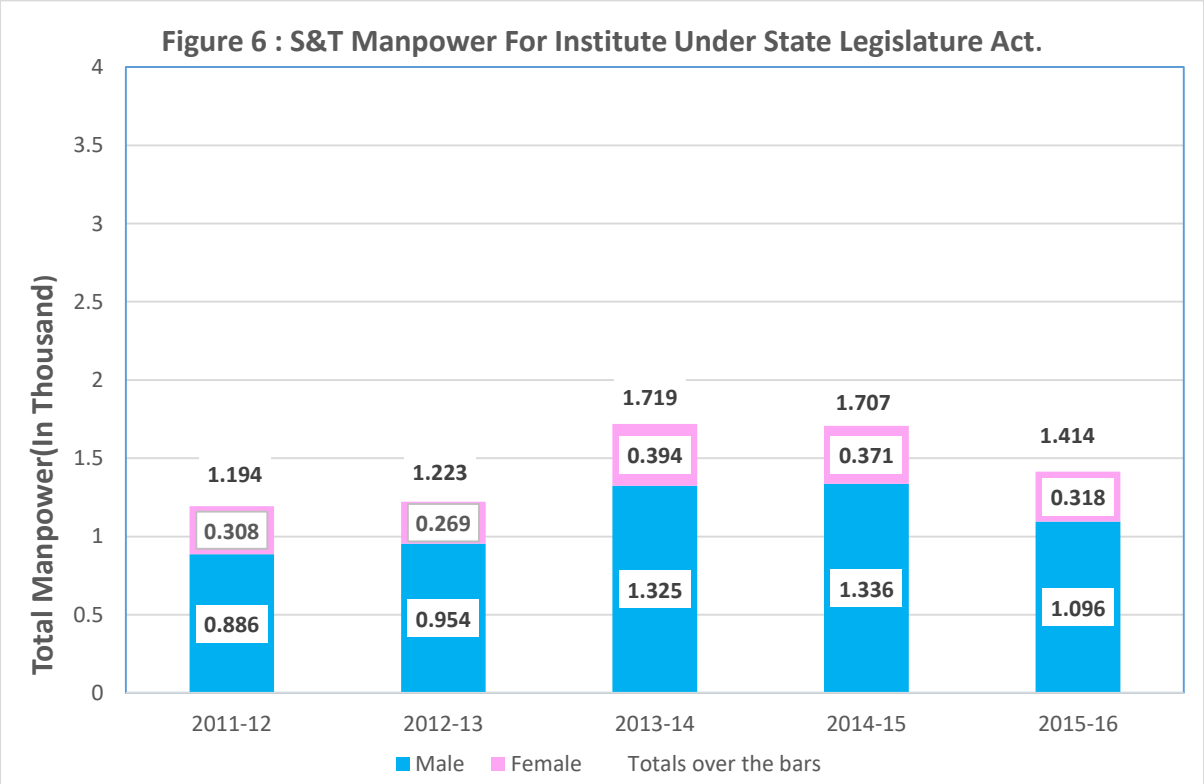


Figure 6 : S&T Manpower For Institute Under State Legislature Act.
Total Manpower(In Thousand)
4
3.5
3
2.5
2
1.5
1
0.5
0
1.194
0.308
0.886
1.223
0.269
0.954
1.719
0.394
1.325
1.707
0.371
1.336
1.414
0.318
1.096
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Totals over the bars

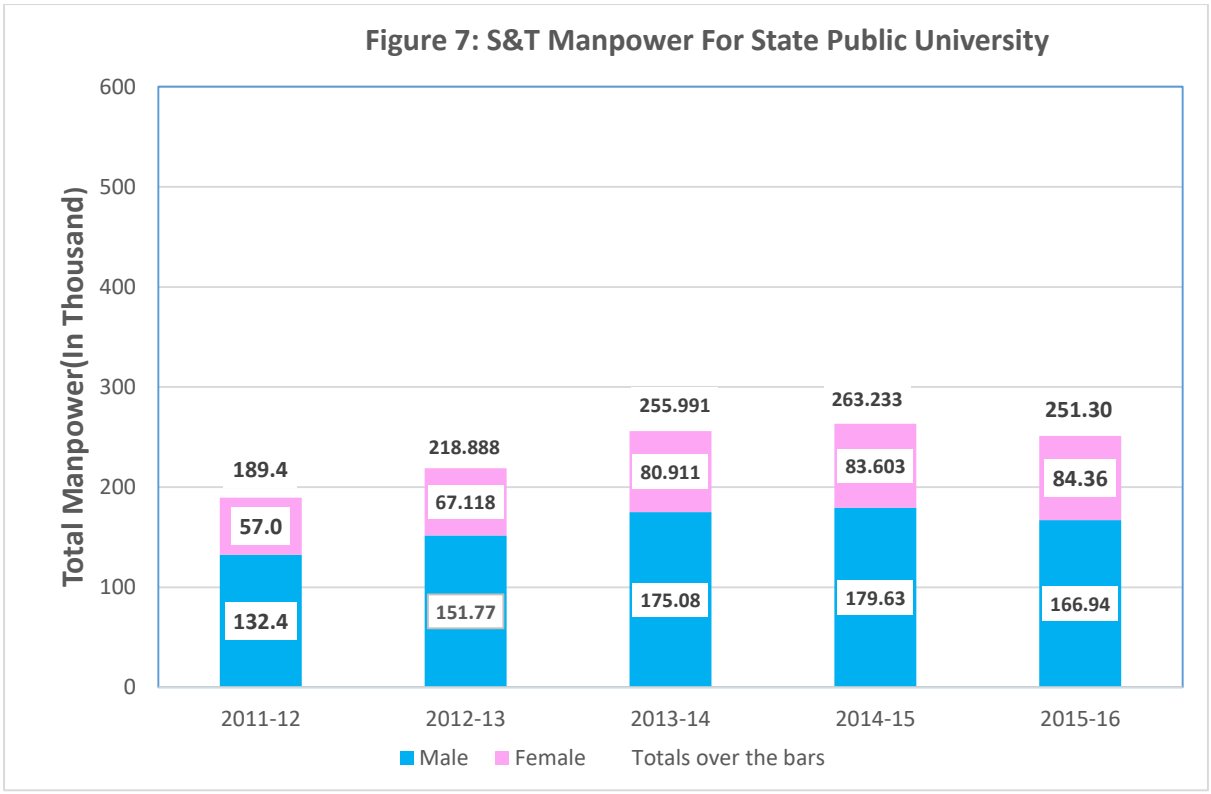


Figure 7: S&T Manpower For State Public University
Total Manpower(In Thousand)
600
500
400
300
200
100
0
189.4
57.0
132.4
218.888
67.118
151.77
255.991
80.911
175.08
263.233
83.603
179.63
251.30
84.36
166.94
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Totals over the bars

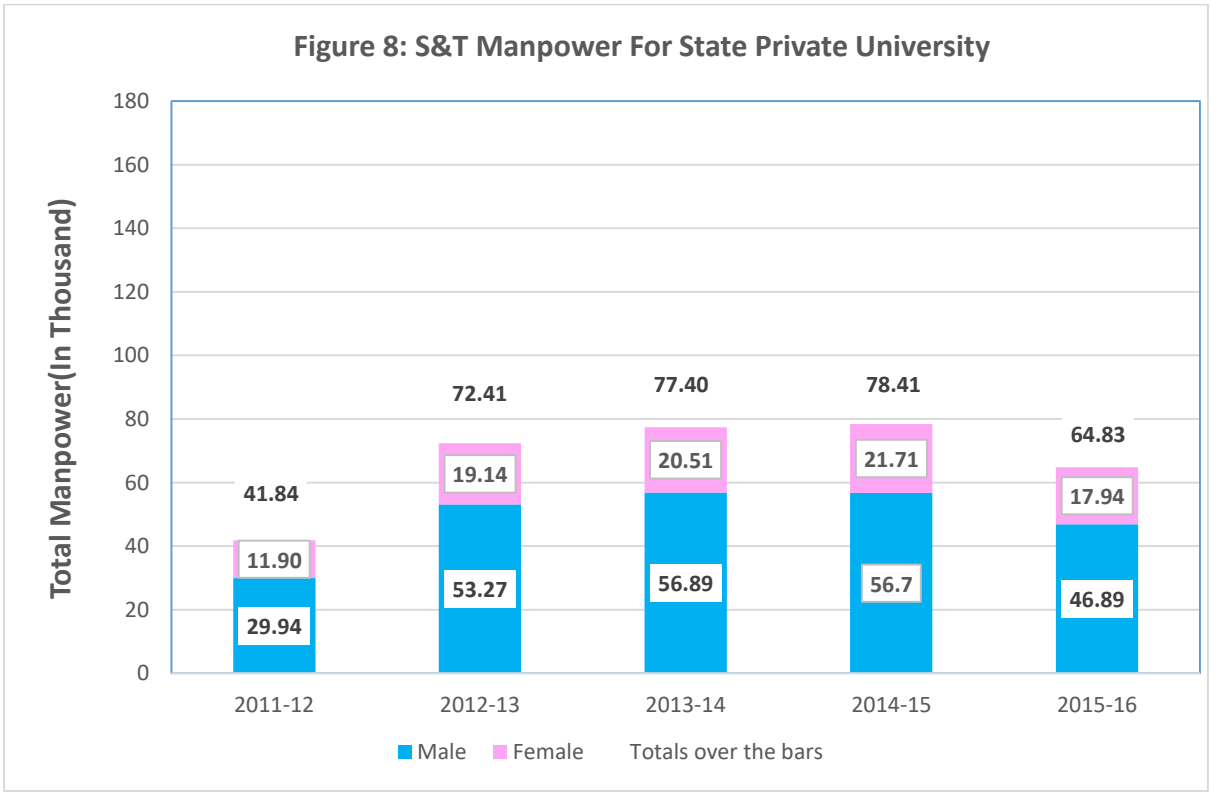


Figure 8: S&T Manpower For State Private University
Total Manpower(In Thousand)
180
160
140
120
100
80
60
40
20
0
41.84
11.90
29.94
72.41
19.14
53.27
77.40
20.51
56.89
78.41
21.71
56.7
64.83
17.94
46.89
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Totals over the bars

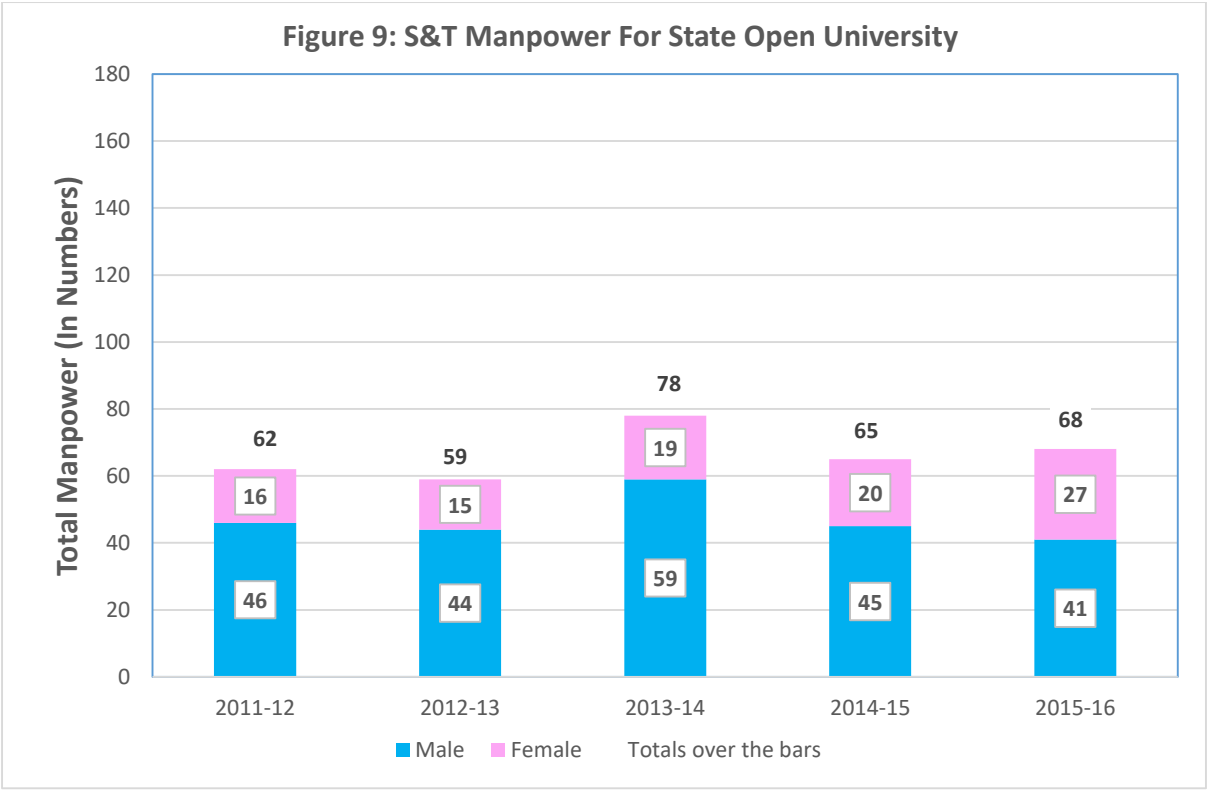


Figure 9: S&T Manpower For State Open University
Total Manpower (In Numbers)
180
160
140
120
100
80
60
40
20
0
62
16
46
59
15
44
78
19
59
65
20
45
68
27
41
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Totals over the bars

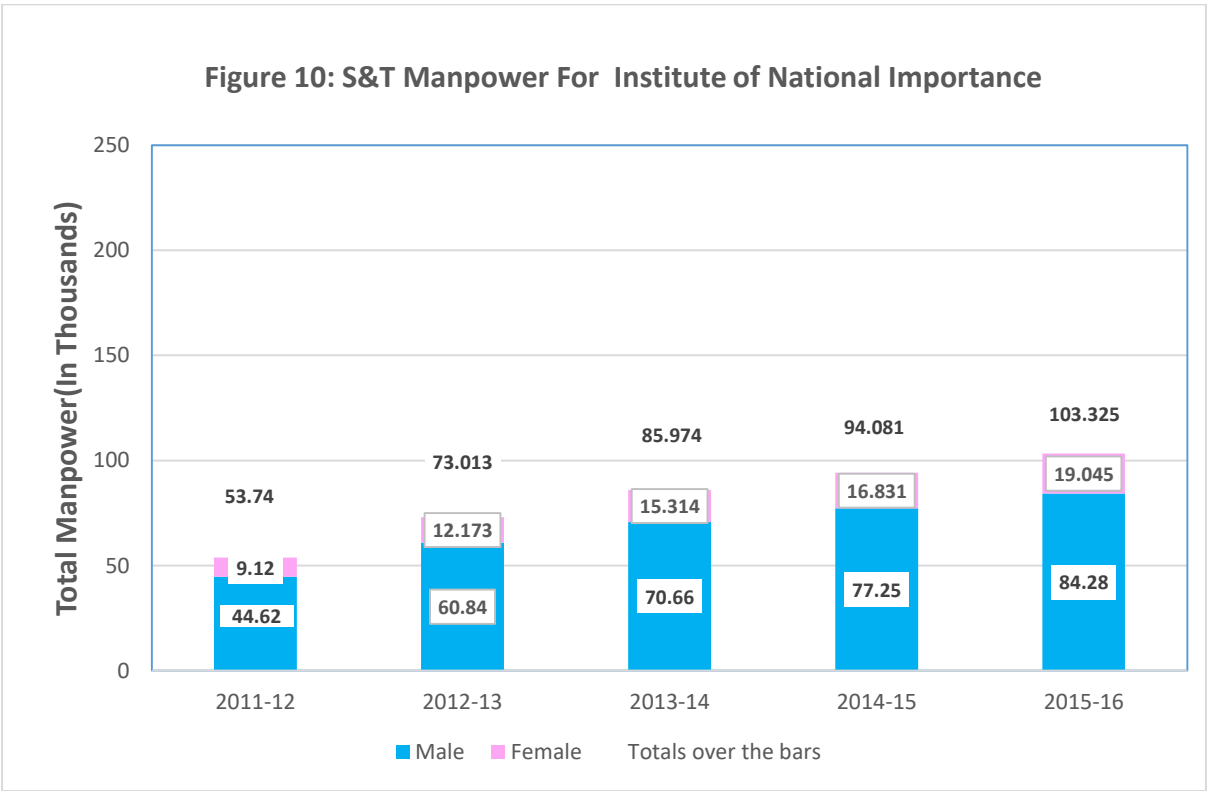


Figure 10: S&T Manpower For Institute of National Importance
Total Manpower(In Thousands)
250
200
150
100
50
0
53.74
9.12
44.62
73.013
12.173
60.84
85.974
15.314
70.66
94.081
16.831
77.25
103.325
19.045
84.28
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Totals over the bars

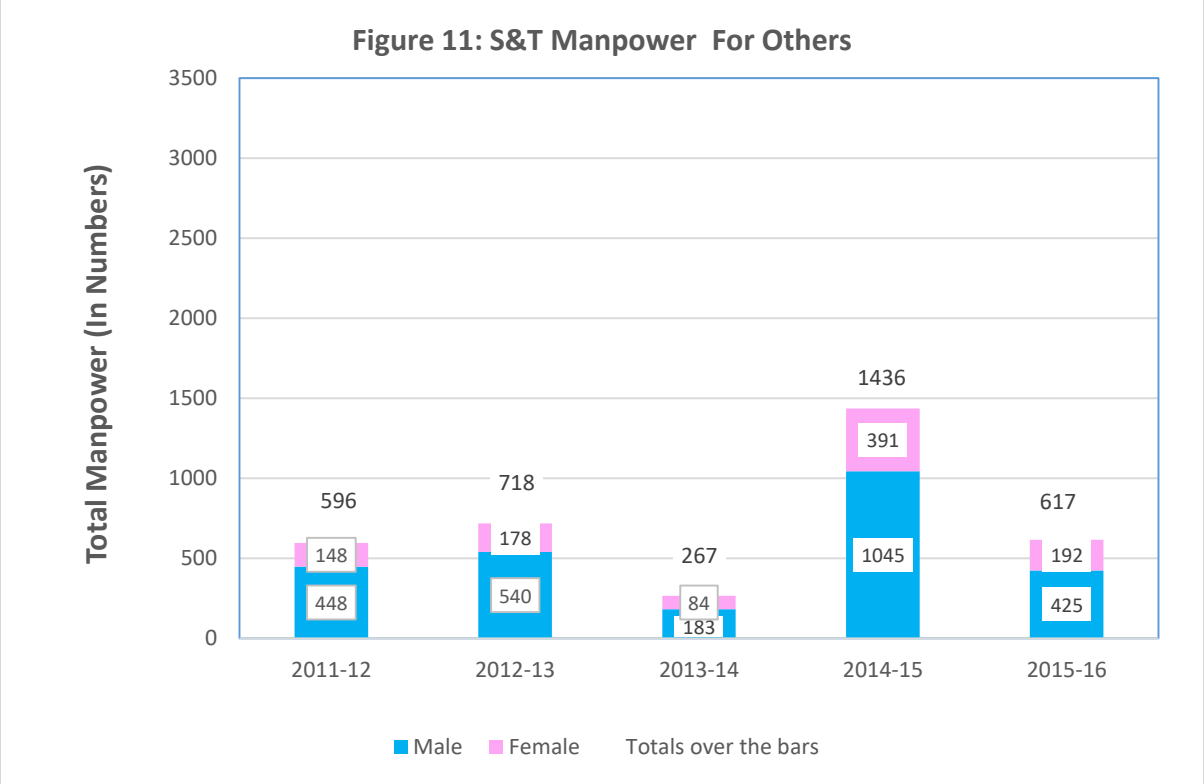


Figure 11: S&T Manpower For Others
Total Manpower (In Numbers)
3500
3000
2500
2000
1500
1000
500
0
596
148
448
718
178
540
267
84
183
1436
391
1045
617
192
425
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Totals over the bars

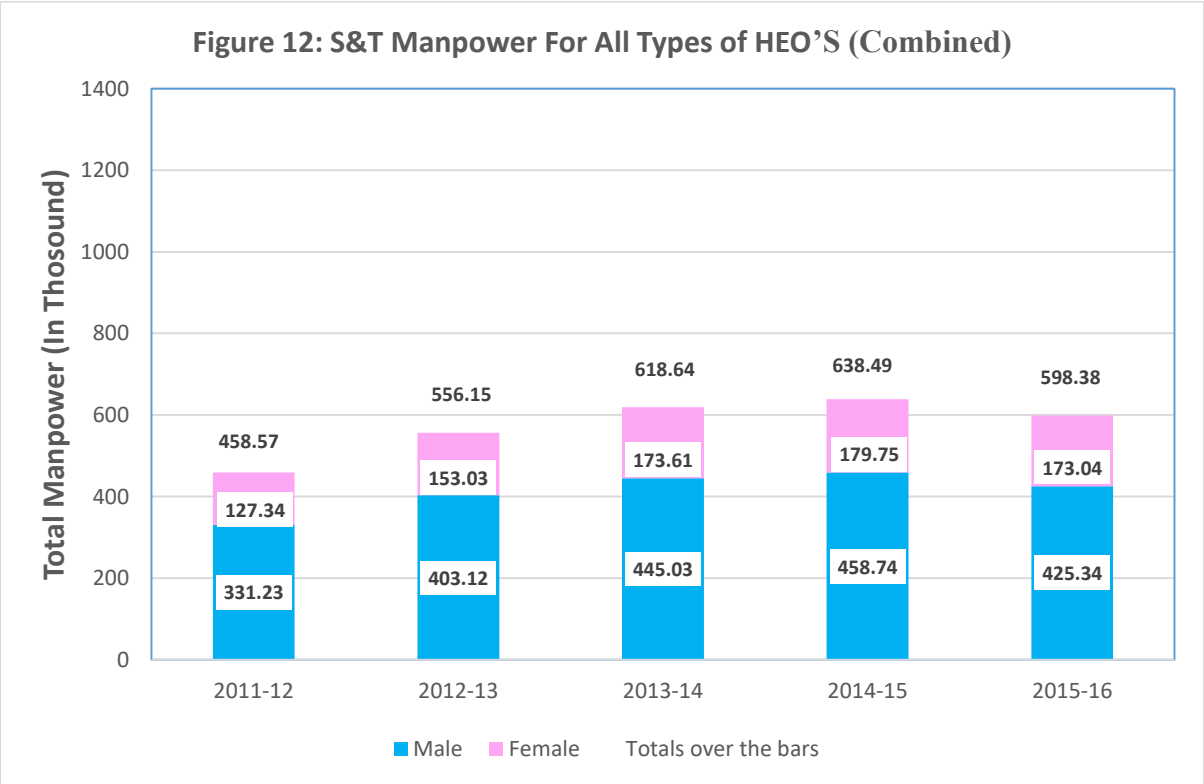


Figure 12: S&T Manpower For All Types of HEO'S (Combined)
Total Manpower (In Thosound)
1400
1200
1000
800
600
400
200
0
458.57
127.34
331.23
556.15
153.03
403.12
618.64
173.61
445.03
638.49
179.75
458.74
598.38
173.04
425.34
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Totals over the bars

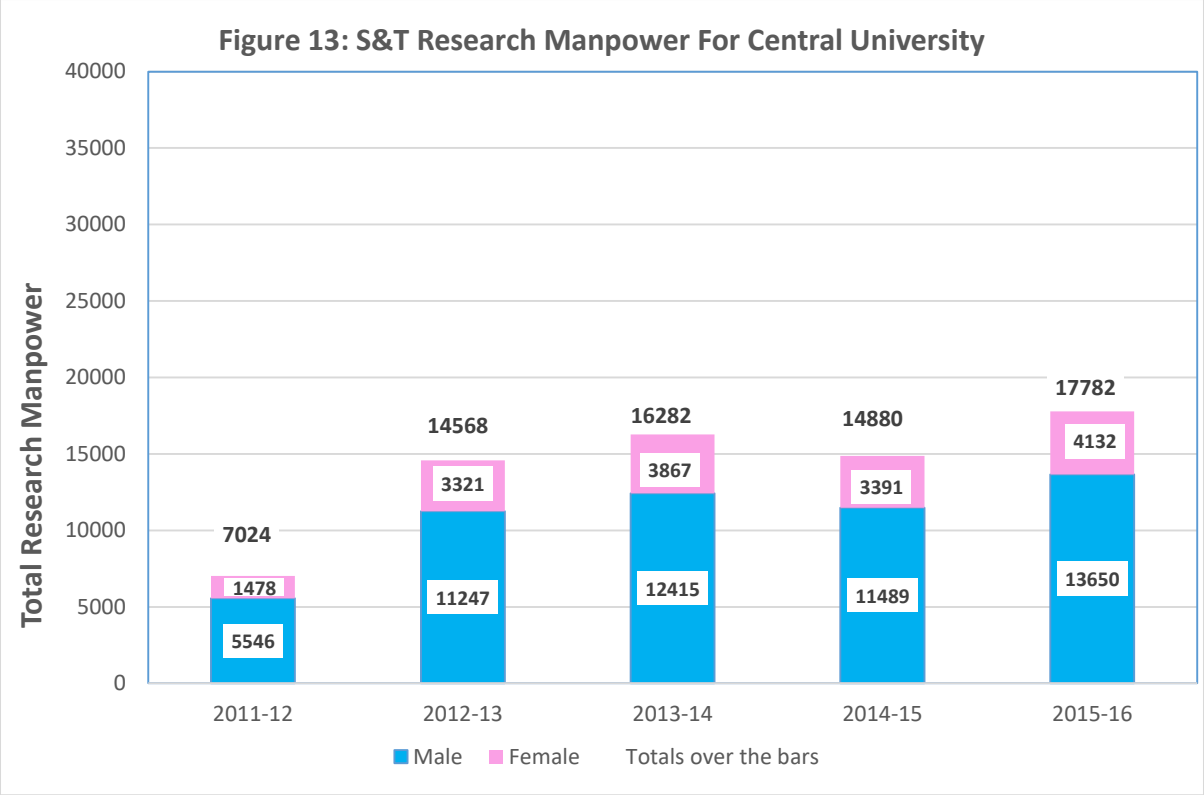


Figure 13: S&T Research Manpower For Central University
Total Research Manpower
40000
35000
30000
25000
20000
15000
10000
5000
0
7024
1478
5546
14568
3321
11247
16282
3867
12415
14880
3391
11489
17782
4132
13650
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Totals over the bars

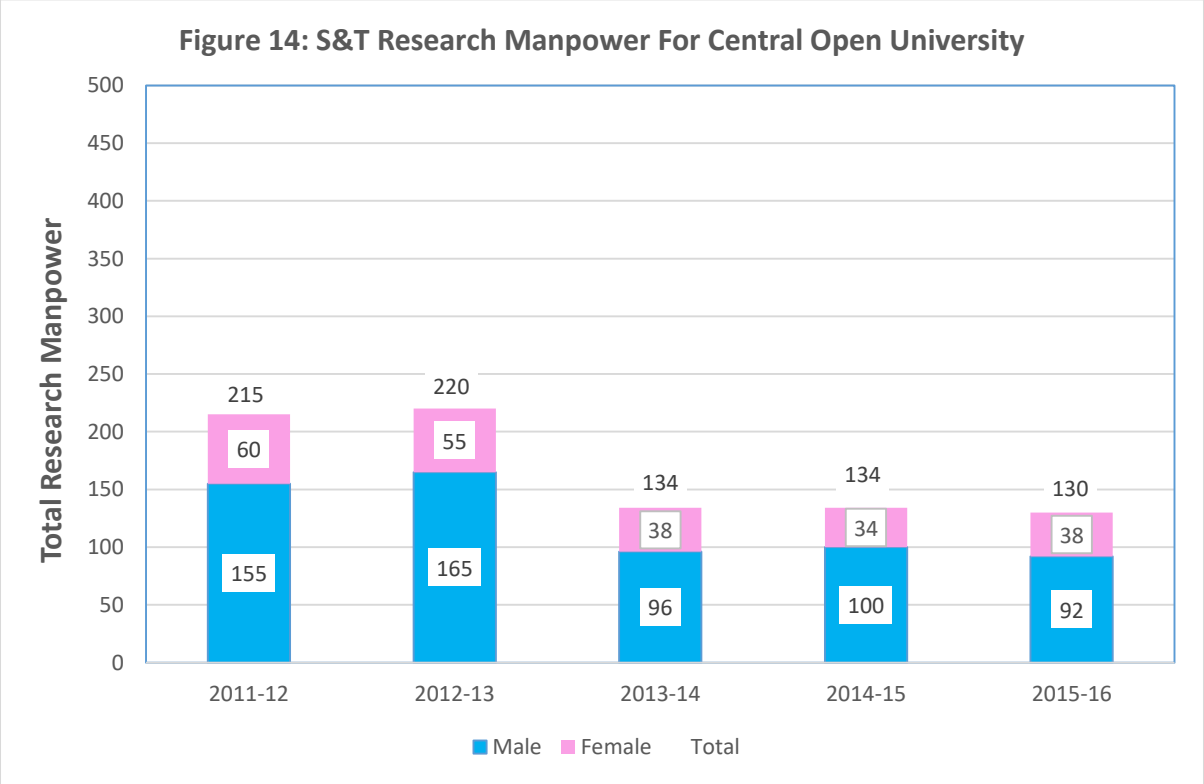


Figure 14: S&T Research Manpower For Central Open University
Total Research Manpower
500
450
400
350
300
250
200
150
100
50
0
215
60
155
220
55
165
134
38
96
134
34
100
130
38
92
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Total

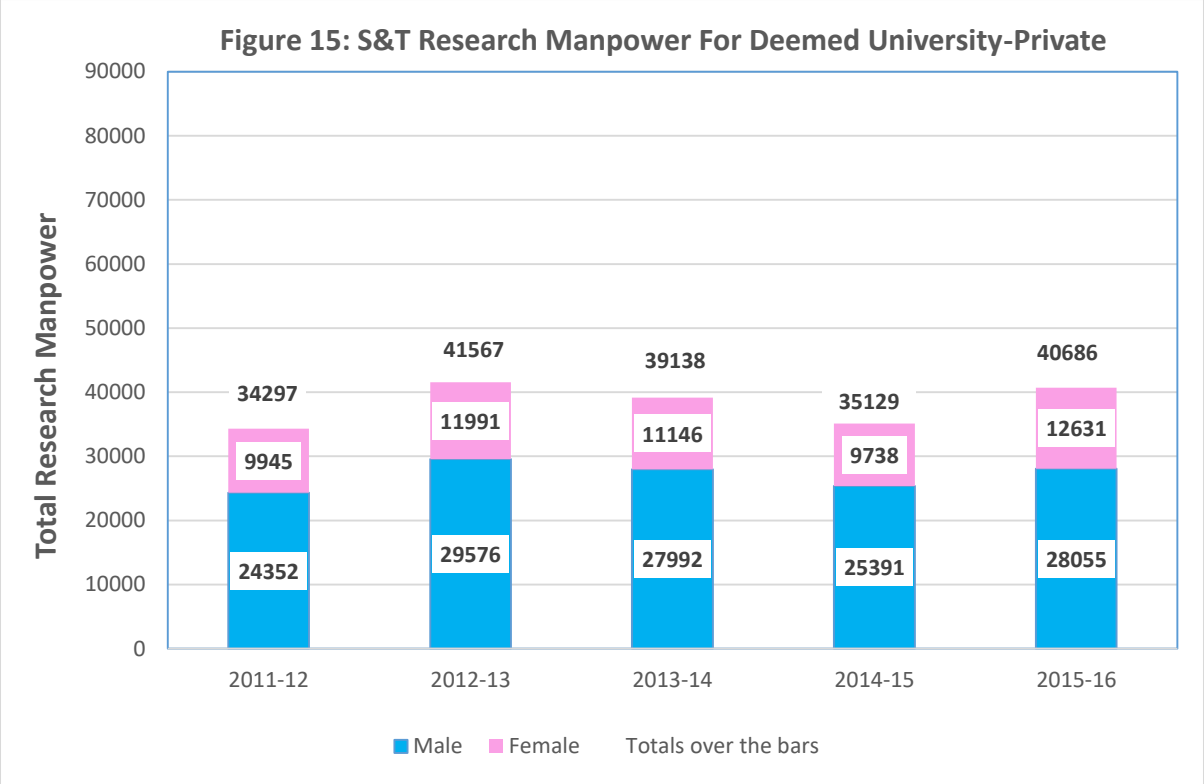


Figure 15: S&T Research Manpower For Deemed University-Private
Total Research Manpower
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
34297
9945
24352
41567
11991
29576
39138
11146
27992
35129
9738
25391
40686
12631
28055
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Totals over the bars

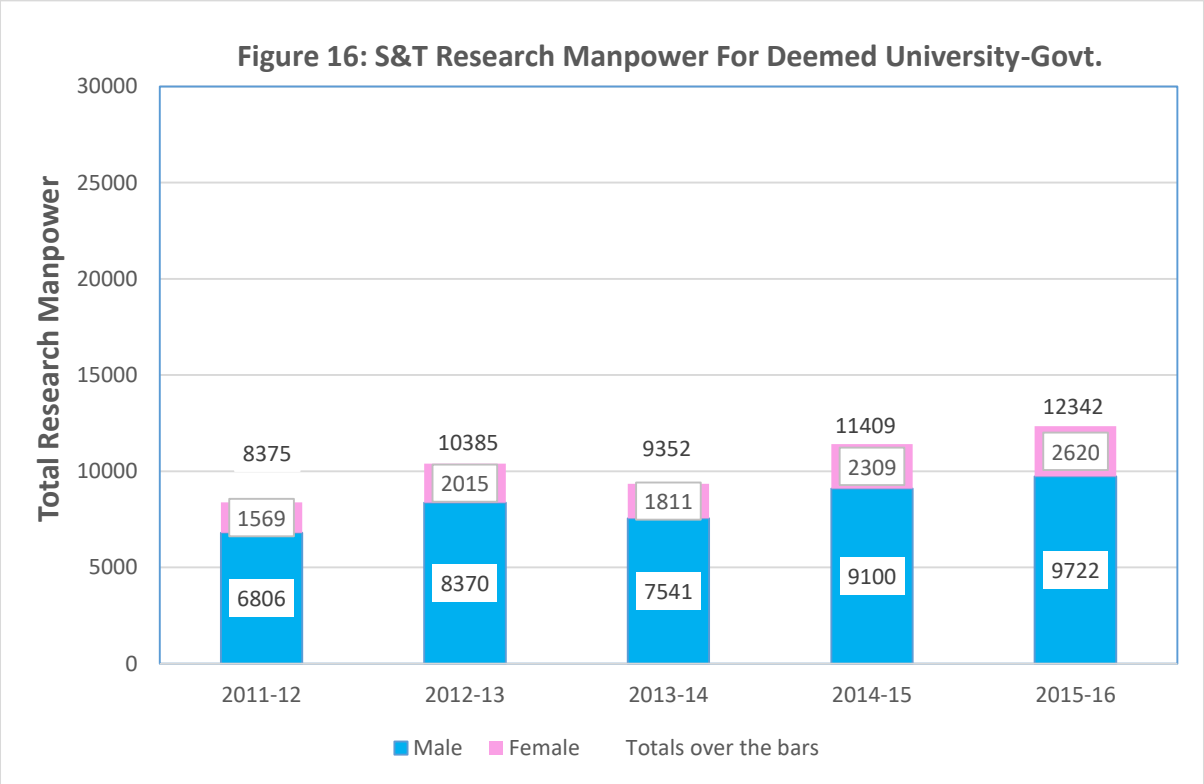


Figure 16: S&T Research Manpower For Deemed University-Govt.
Total Research Manpower
30000
25000
20000
15000
10000
5000
0
8375
1569
6806
10385
2015
8370
9352
1811
7541
11409
2309
9100
12342
2620
9722
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Totals over the bars

Figure 17: S&T Research Manpower For Deemed University-Govt. Aided

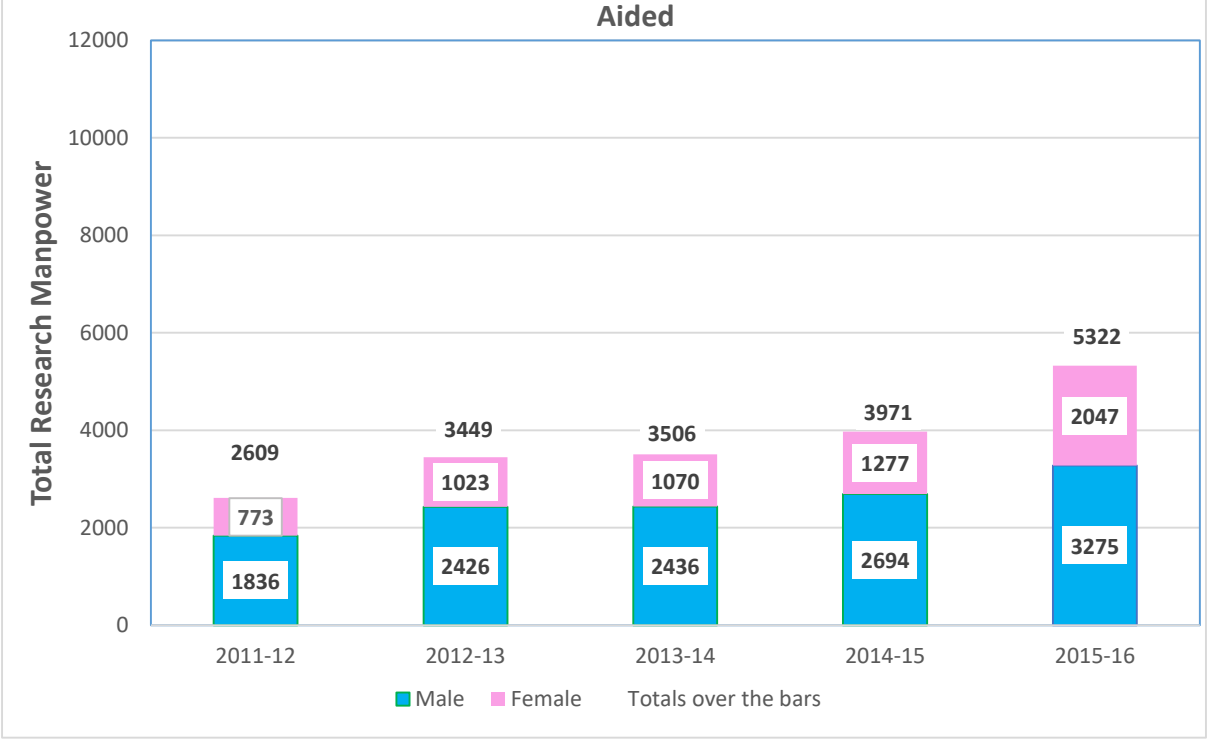
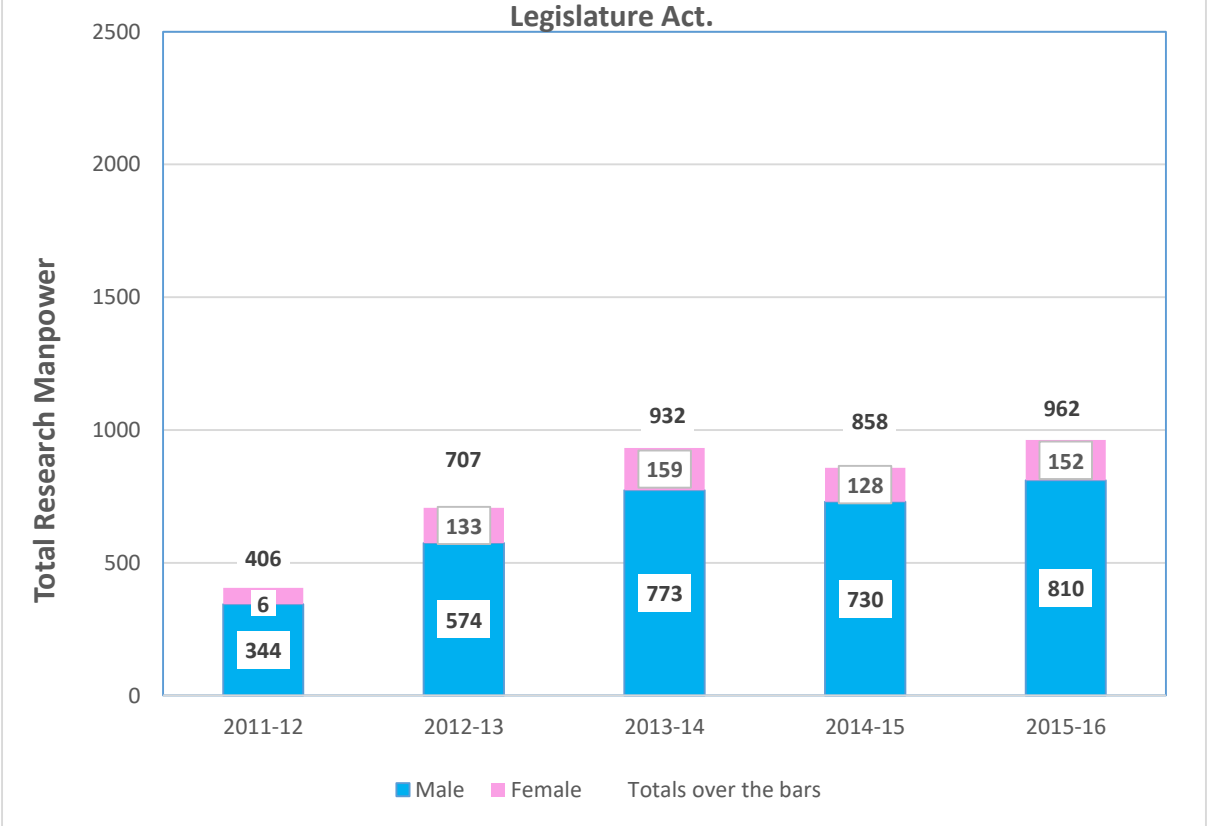


Figure 18 : S&T Research Manpower For Institute Under State Legislature Act.



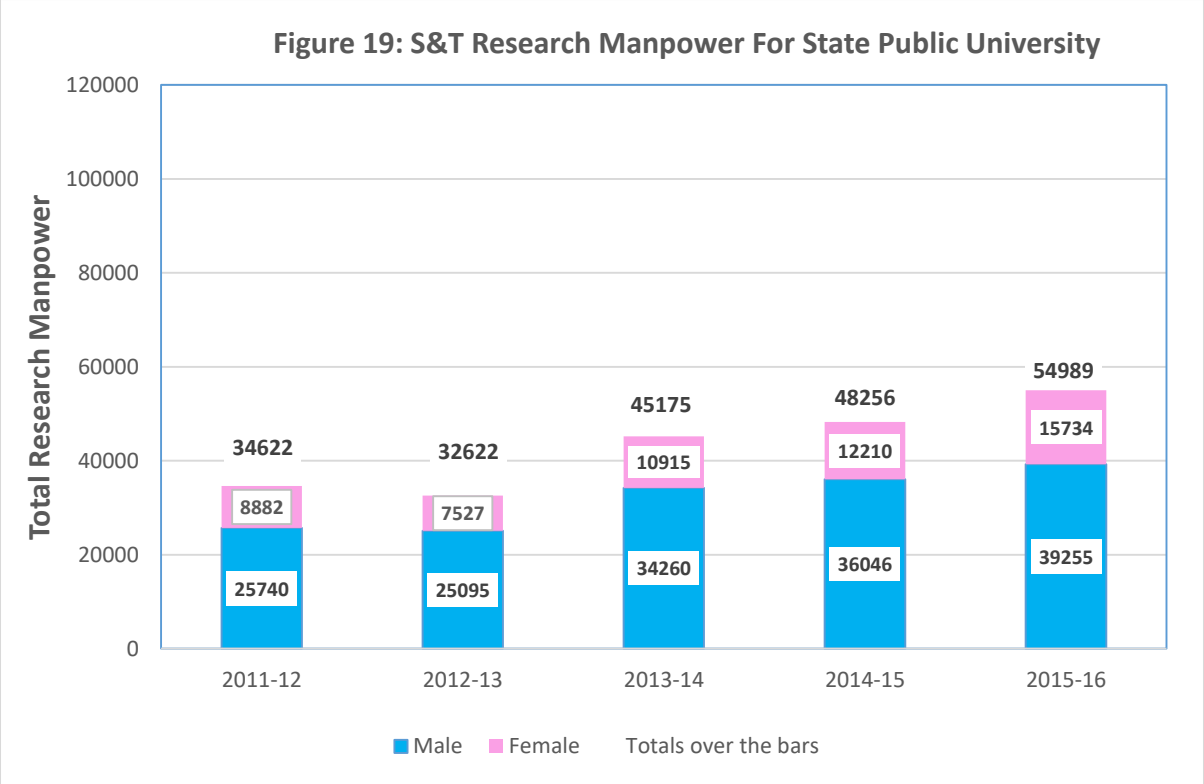


Figure 19: S&T Research Manpower For State Public University
Total Research Manpower
120000
100000
80000
60000
40000
20000
0
34622
8882
25740
32622
7527
25095
45175
10915
34260
48256
12210
36046
54989
15734
39255
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Totals over the bars

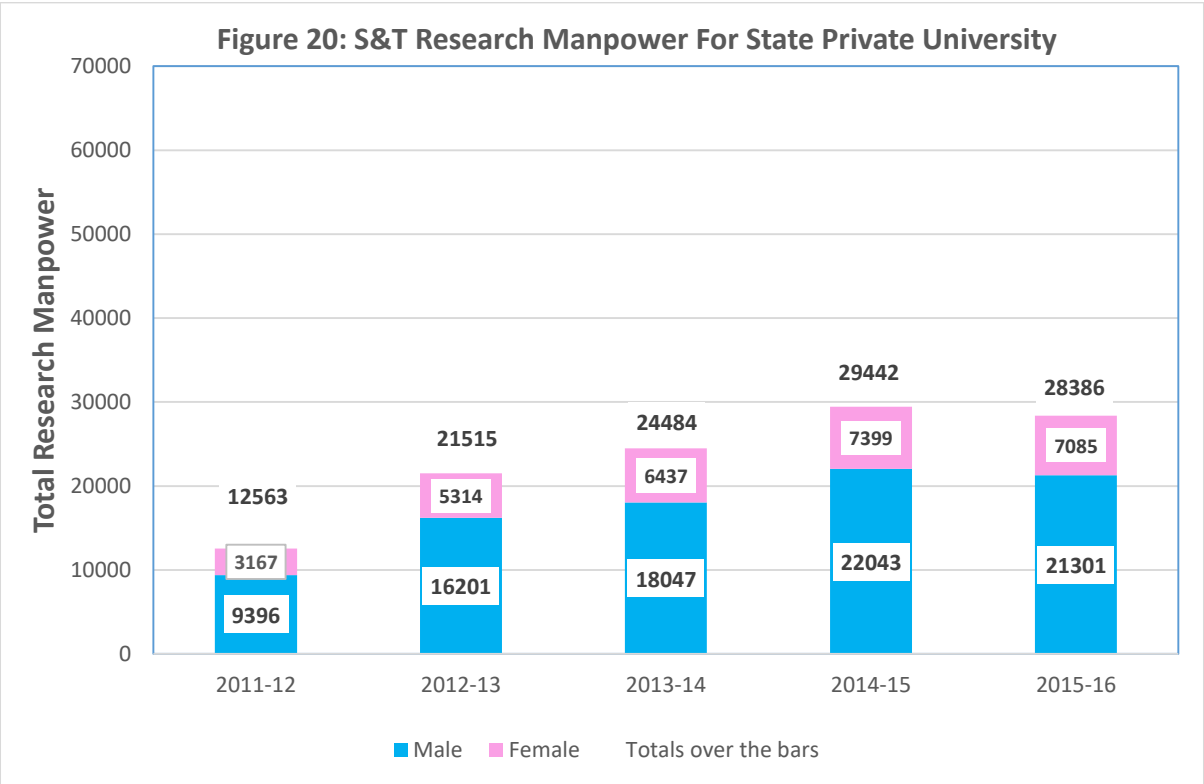


Figure 20: S&T Research Manpower For State Private University
Total Research Manpower
70000
60000
50000
40000
30000
20000
10000
0
12563
3167
9396
21515
5314
16201
24484
6437
18047
29442
7399
22043
28386
7085
21301
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Totals over the bars

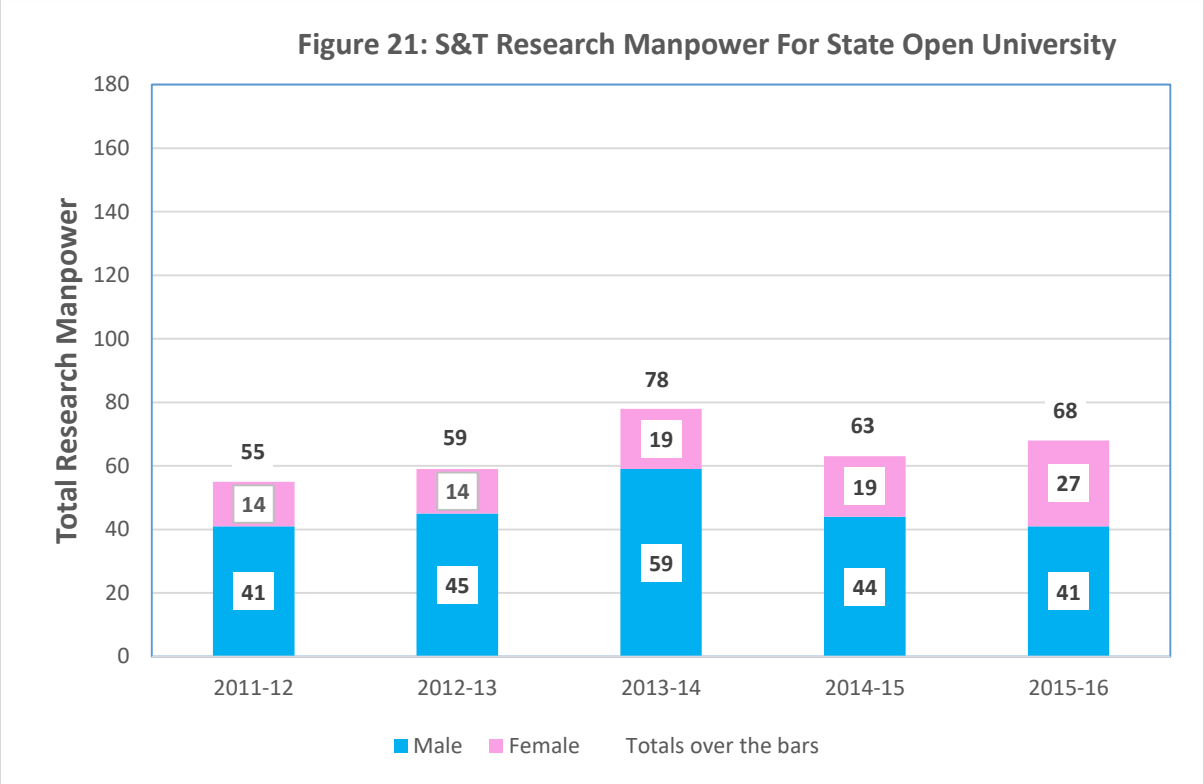


Figure 21: S&T Research Manpower For State Open University
Total Research Manpower
180
160
140
120
100
80
60
40
20
0
55
14
41
59
14
45
78
19
59
63
19
44
68
27
41
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Totals over the bars

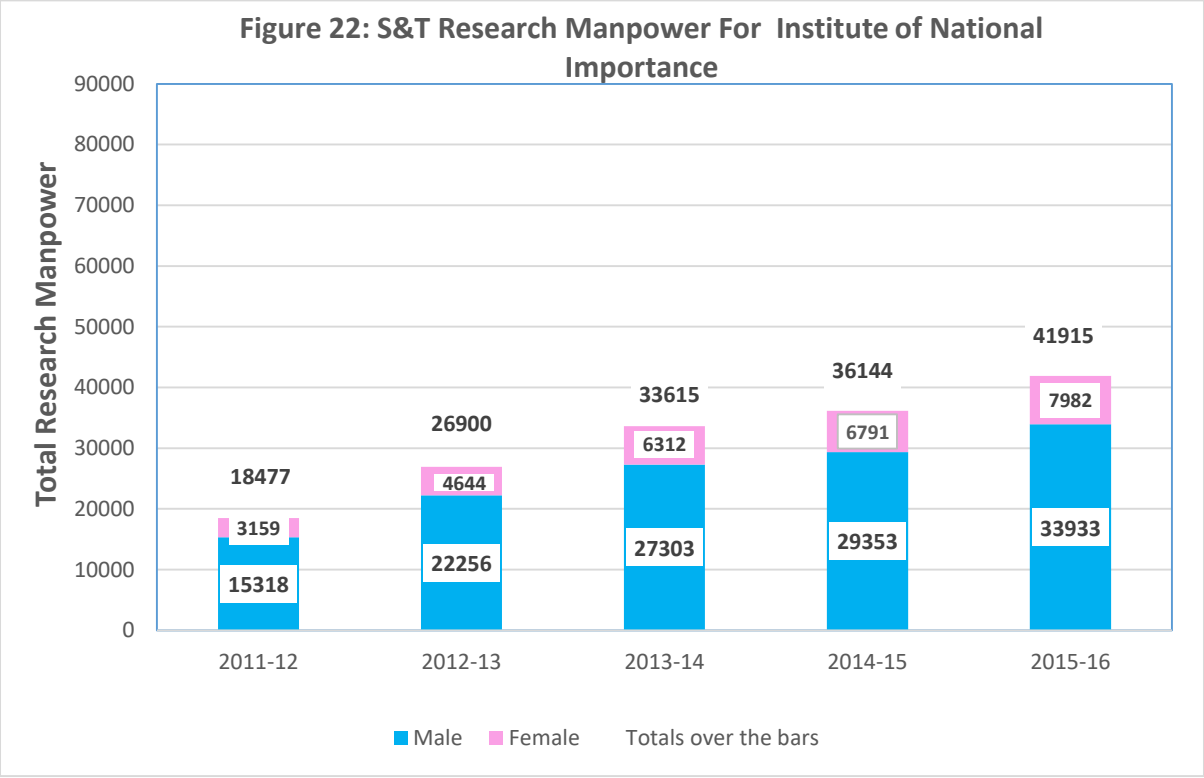


Figure 22: S&T Research Manpower For Institute of National Importance
Total Research Manpower
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
18477
3159
15318
26900
4644
22256
33615
6312
27303
36144
6791
29353
41915
7982
33933
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Totals over the bars

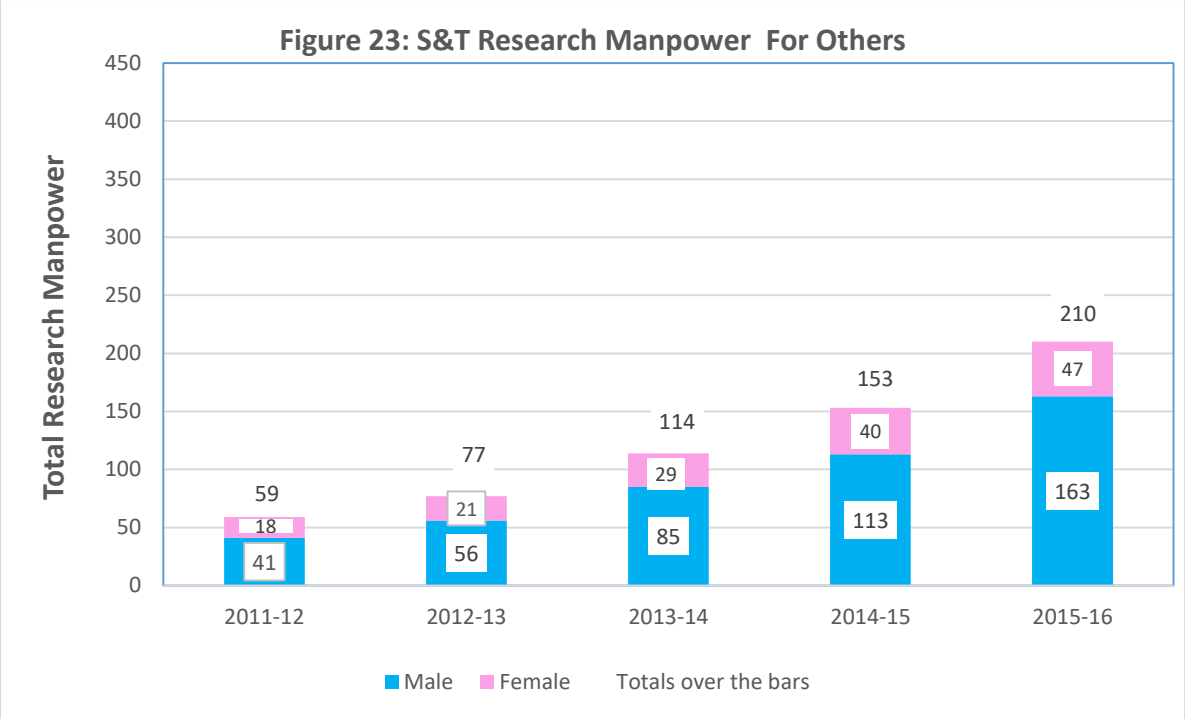


Figure 23: S&T Research Manpower For Others
Total Research Manpower
450
400
350
300
250
200
150
100
50
0
59
18
41
77
21
56
114
29
85
153
40
113
210
47
163
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Totals over the bars

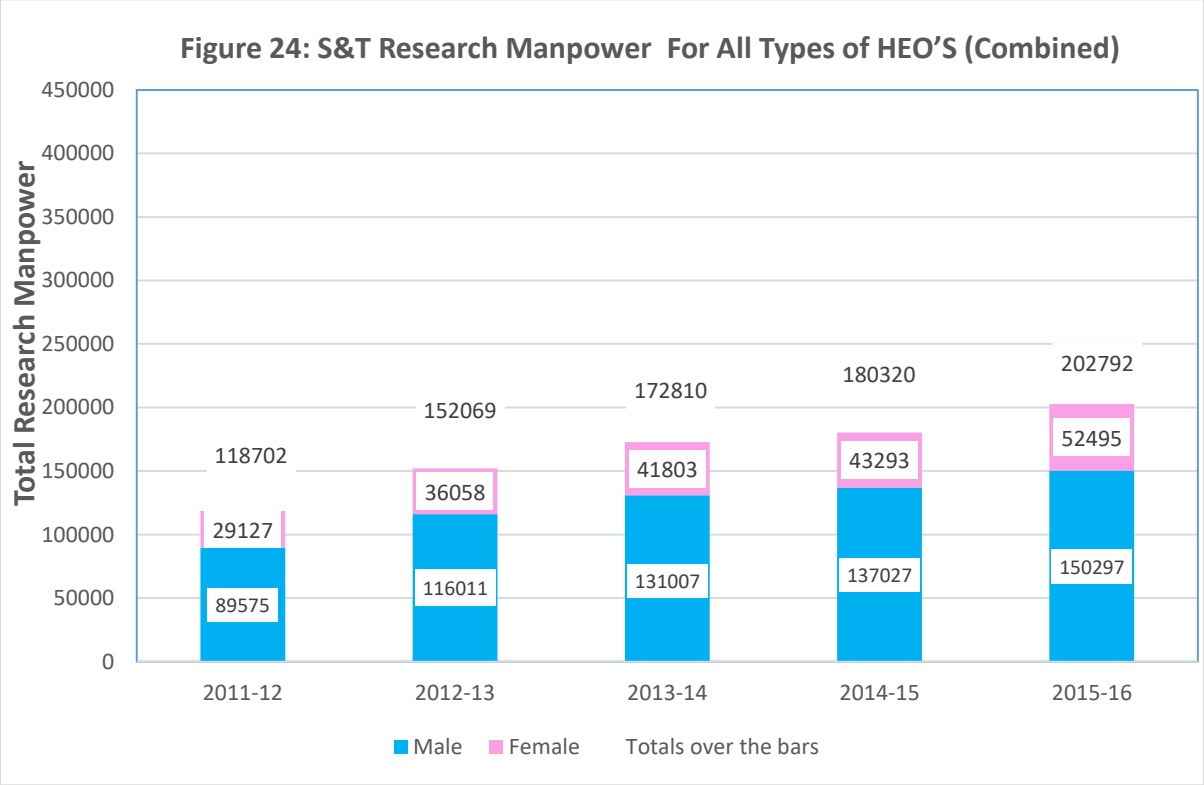


Figure 24: S&T Research Manpower For All Types of HEO'S (Combined)
Total Research Manpower
450000
400000
350000
300000
250000
200000
150000
100000
50000
0
118702
29127
89575
152069
36058
116011
172810
41803
131007
180320
43293
137027
202792
52495
150297
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Totals over the bars

iii. Type 7(State Public University), has highest Manpower followed by Type 3(Deemed University Private.), and Type 10 (Institute of National Importance), in all the four years 2011to 2014 except in 2015, when Manpower in Type 10 is higher than that of Type 3.

iv. Manpower in all combined Types of HEO's continuously increases from 2011 to 2014 and decreases in 2015 slightly.

v. On the whole it appears that **male Manpower** is more than approximately **2.5 times Female Manpower.**

6.1.2 Variation of Research Manpower (or Total Head Counts)

Contents of Table 5.2a and Bar Charts in Figures 13 to 24 show the variation of Research Manpower (or Total Head Counts) engaged in S&T disciplines, type and year wise. It can be seen that

i. There is a steady increase in S&T Research Manpower in Types 5 (Deemed University Govt. Aided), 10 (Institute of National Importance), 11(Others) and all Combined Types; with advancing years

ii. There appears to be no similarity in variation pattern of Research Manpower in the other 8 Types of HEO's.

We observe that some groups of HEO's have similar variation as indicated below

(a) In Types 1 (Central University), 6 (Institute Under State Legislature Act) and 9 (State Open Universities)' Research Manpower increases from 2011 -12 to 2013-14, decreases in 2014-15 and again increases in 2015-16.
In types 1 and 6; the Research Manpower is highest in2015-16.In type 9, the Research Manpower is Highest in 2013-14.

(b) Research Manpower increases in the next year after 2011-12 in Type 2(Central Open University and then decreases up to 2015-16.

(c) In Type 8 (State Private University) after continuous increase in Research Manpower in years 2011 to 2014 it decreases slightly in 2015-16.
In Type 7 (State Public University) there is slight decrease in 2012 -13 and continuously increases in the next three years
In Type 4(Deemed University Govt.) slight decrease is noticed in 2013-14.

(d) In Type 3 (Deemed University Private), there is increase of Research Manpower in 2012 from that of 2011, it decreases for next two years and increases again in 2015-16. Highest value is in the year 2012-13.

The female participation (i.e. numbers) is about one third of the male participation in almost all the years.

6.2 Full Time Engagement (FTE) in R&D Activities in Science and Technology

Using the expression given in equation (2.5) in **Chapter 2. Methodology**, FTE have been computed for each HEO of each of the 11 types of HEO's. Table 5.3 gives the year and gender-wise FTE (in **Hours/week**) for each of the 11 types of HEO's. As in Table 5.2, the number of HEO's whose data has contributed to computation of FTE are also entered in brackets.

6.2.1 Variation of Full Time Engagement (FTE) in R&D Activities in S&T Disciplines

Figures 25 to 36 show the **Full Time Engagement (FTE)** (in Hours per week) in R&D activities in the 11 types of HEO's; year and gender wise and for all the 11 types combined. Looking at all the said figures and Table 5.3 for the FTE, the following results emerge:

i. The male FTE is 2.5 to 3 times the female FTE in hours per week.

ii. Figures 29,30,34,35,36 and Table 5.3 show that FTE continuously increases with advancing years in Types 5 (Deemed University Govt. Aided), 6(Institutes under Legislature Act) , Types 10(Inst. of National Importance) and 11(Others) and all combined.

iii. Figures 25, 27, 28, 31, 32 and Table 5.3 show that FTE in Types 1(Central University), 3 (Deemed University Private), 4 (Deemed University Govt.), 7 (State Public Universities), and 8(State Private Universities), FTE increases from 2011-12 to 2015-16 except that FTE declines in one of the said five years. These years are 2014, 2014, 2013, 2012 and 2015 respectively.

iv. According to Figure 26, FTE in Type 2(Central Open University) increases from 2011 to 2012 from 2013 ton 2014 after a sharp decline in 2013-14 from 2012-13 . Lastly in 2015, it declines again to become lowest in 2015-16.

v. The FTE in Type 7 (State Public Universities), is highest followed by Type 10(Inst. of National Importance) and Type 3(Deemed University Private).

6.3 Variation of Expenditure on R&D Activities in Science and Technology (ERD)

Table 5.4 gives the expenditure on R&D activities in S&T disciplines (ERD) for all the five study years 2011 to 2015, for each of the eleven types of HEO's. Figures 37 to 48 show the Bar charts for the same.

Looking at both of these the salient features of variation in ERD is as follows:

The pattern of Bar Chart indicates that expenditure on R&D activities is quite different for various types of HEO's. Some identical nature of increase or decrease with advancing years may be described as

(a) In two types of HEO's, viz. Types 9(State Open Universities) and 10 (Inst. of National Importance), ERD increases with passage of years except that it decreases in 2015 in Type 10.

(b) ERD of Type 1, Central Universities increases till 2013-14 and then decreases gradually every year till 2015.

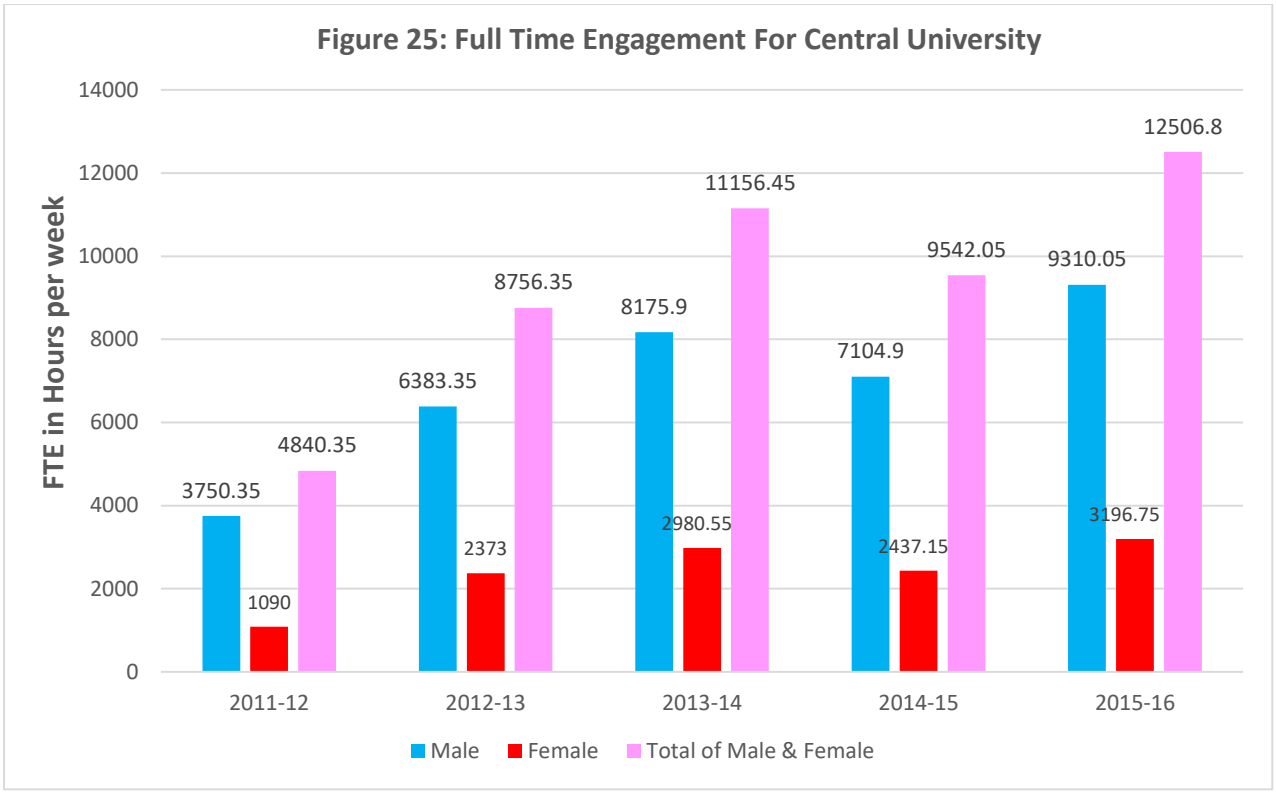


Figure 25: Full Time Engagement For Central University
FTE in Hours per week
14000
12000
10000
8000
6000
4000
2000
0
3750.35
1090
4840.35
6383.35
2373
8756.35
8175.9
2980.55
11156.45
7104.9
2437.15
9542.05
9310.05
3196.75
12506.8
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Total of Male & Female

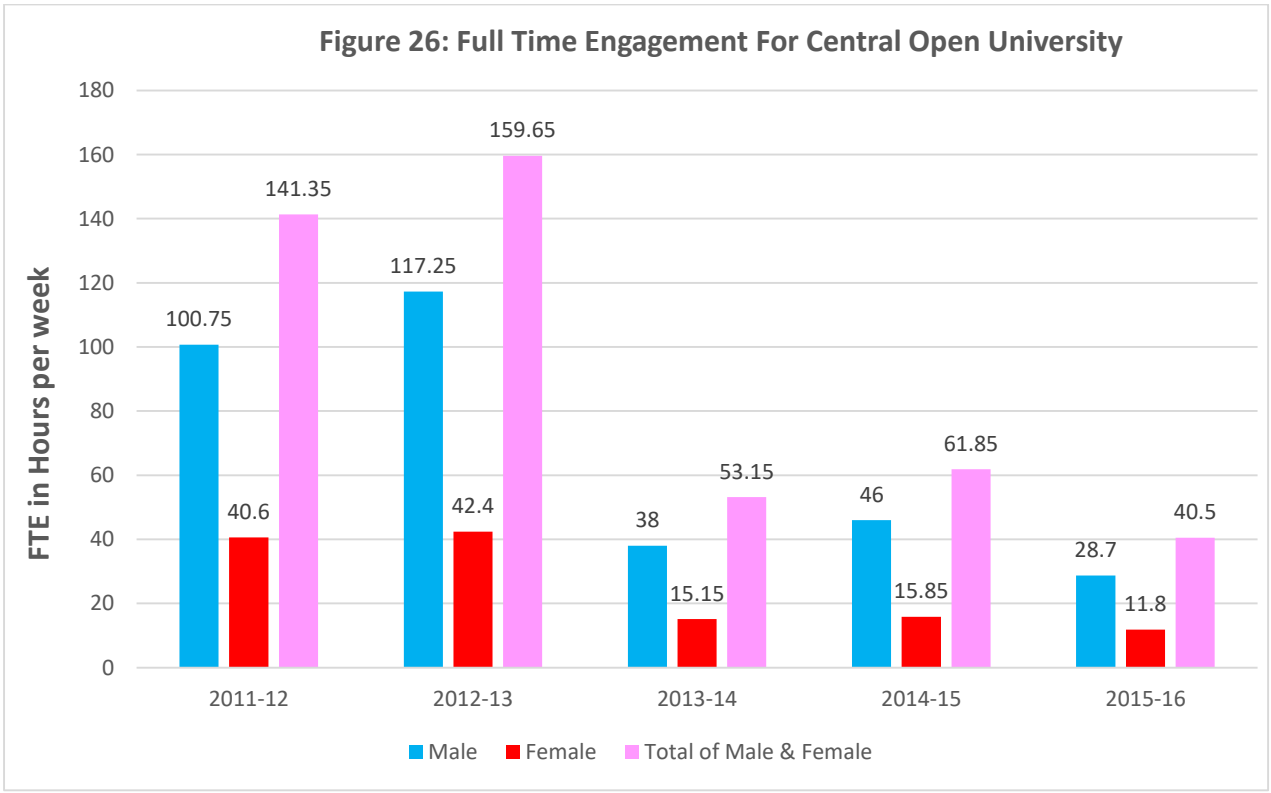


Figure 26: Full Time Engagement For Central Open University
FTE in Hours per week
180
160
140
120
100
80
60
40
20
0
100.75
40.6
141.35
117.25
42.4
159.65
38
15.15
53.15
46
15.85
61.85
28.7
11.8
40.5
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Total of Male & Female

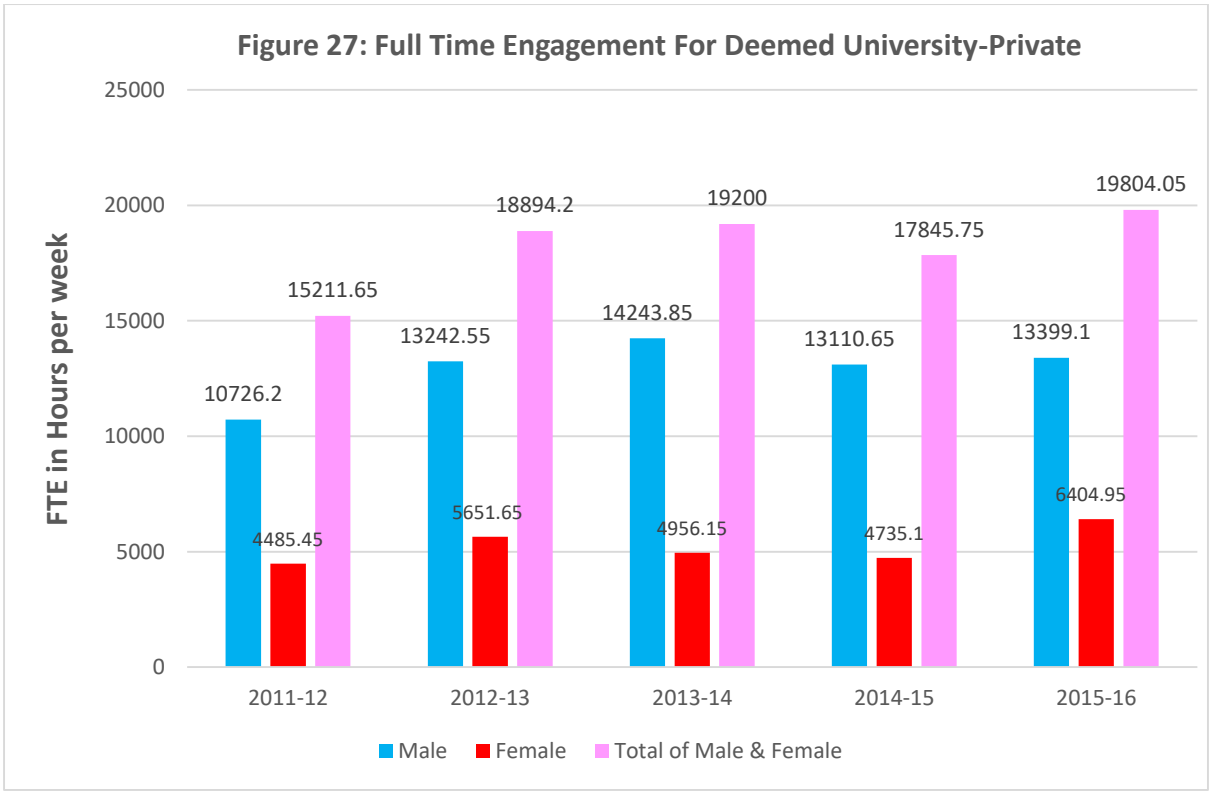


Figure 27: Full Time Engagement For Deemed University-Private
FTE in Hours per week
25000
20000
15000
10000
5000
0
10726.2
4485.45
15211.65
13242.55
5651.65
18894.2
14243.85
4956.15
19200
13110.65
4735.1
17845.75
13399.1
6404.95
19804.05
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Total of Male & Female

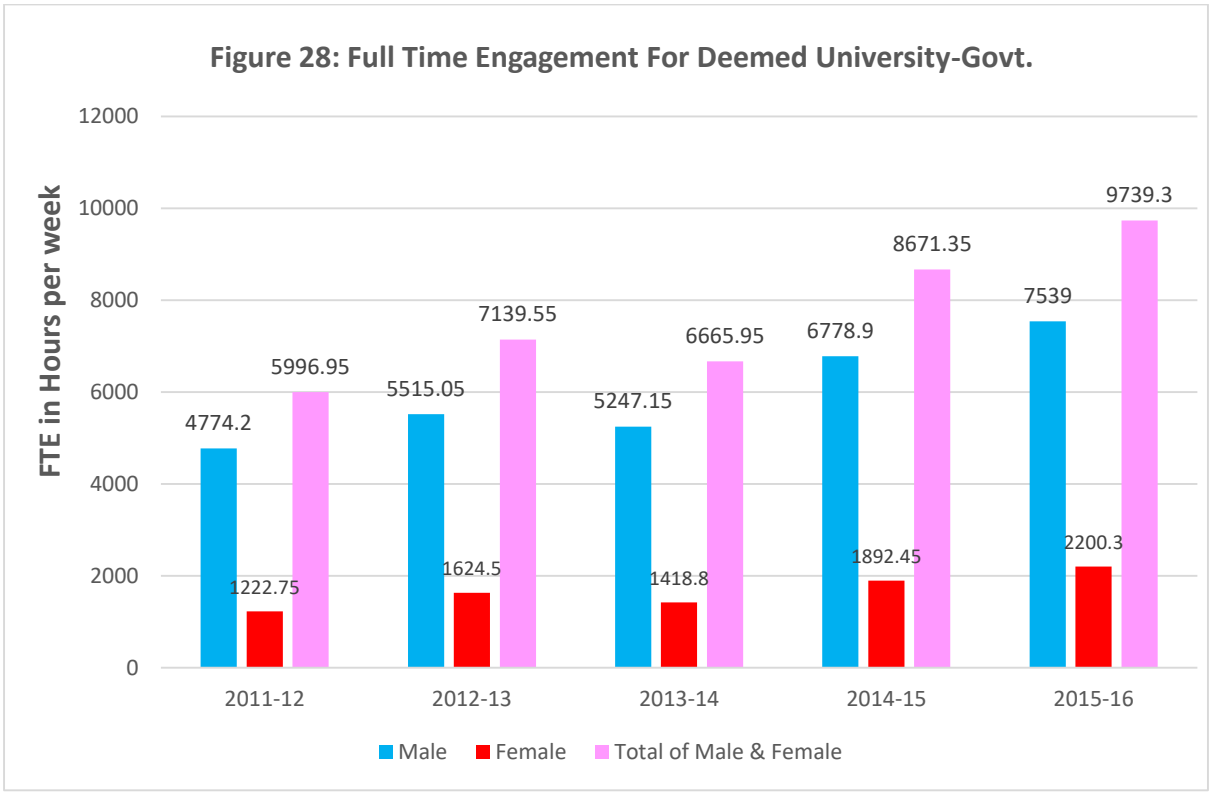


Figure 28: Full Time Engagement For Deemed University-Govt.
FTE in Hours per week
12000
10000
8000
6000
4000
2000
0
4774.2
1222.75
5996.95
5515.05
1624.5
7139.55
5247.15
1418.8
6665.95
6778.9
1892.45
8671.35
7539
2200.3
9739.3
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Total of Male & Female

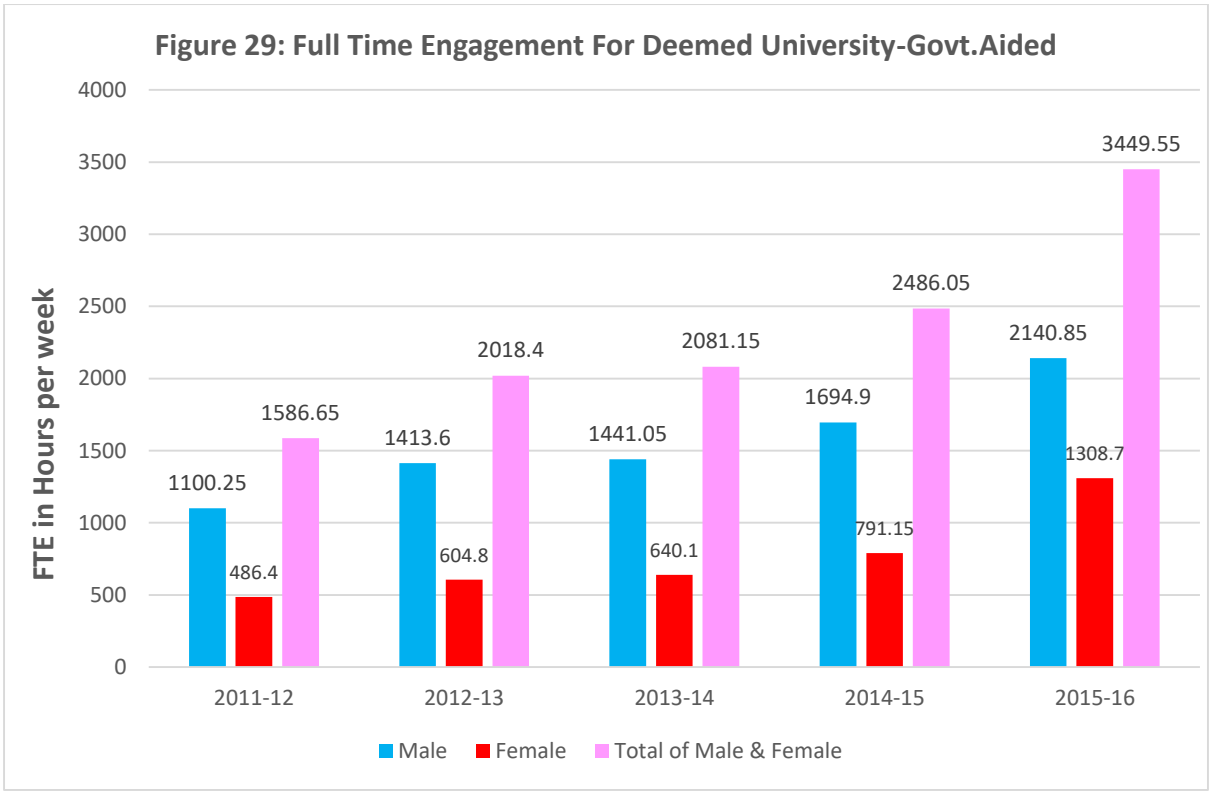


Figure 29: Full Time Engagement For Deemed University-Govt.Aided
FTE in Hours per week
4000
3500
3000
2500
2000
1500
1000
500
0
1100.25
486.4
1586.65
1413.6
604.8
2018.4
1441.05
640.1
2081.15
1694.9
791.15
2486.05
2140.85
1308.7
3449.55
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Total of Male & Female

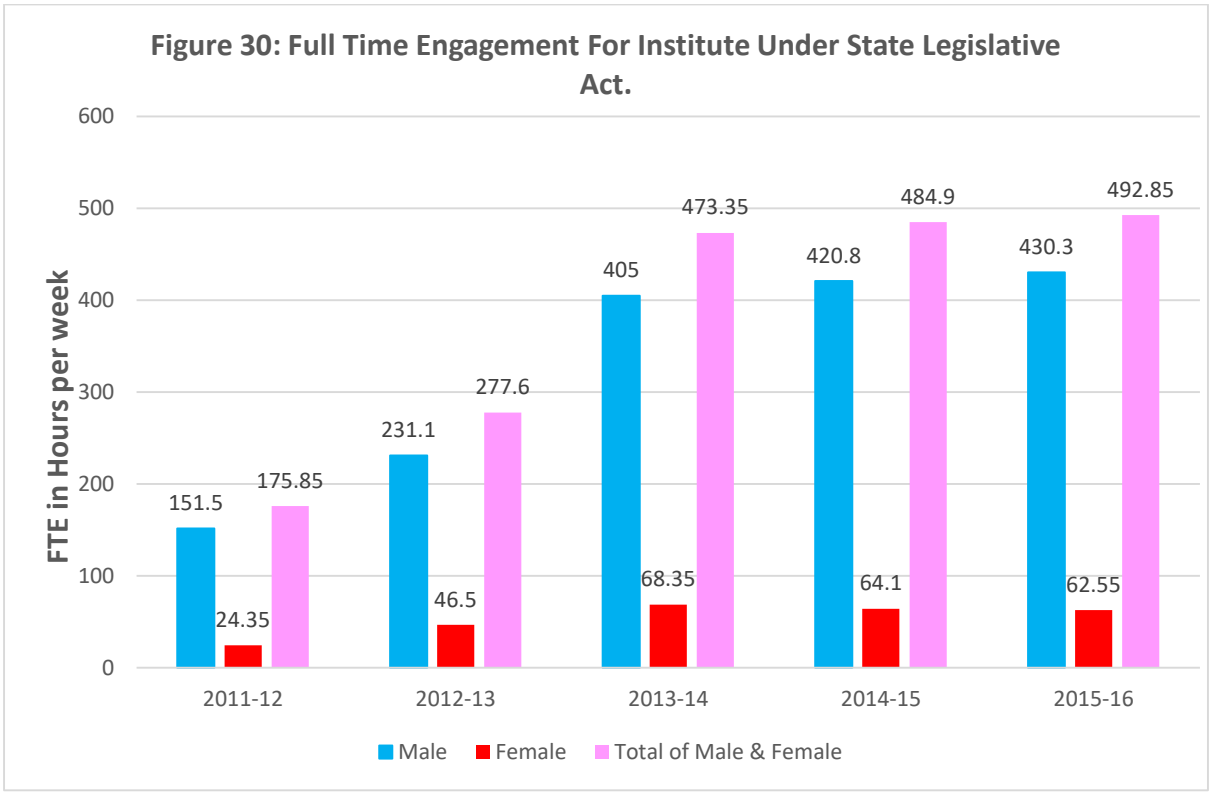


Figure 30: Full Time Engagement For Institute Under State Legislative Act.
FTE in Hours per week
600
500
400
300
200
100
0
151.5
24.35
175.85
231.1
46.5
277.6
405
68.35
473.35
420.8
64.1
484.9
430.3
62.55
492.85
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Total of Male & Female

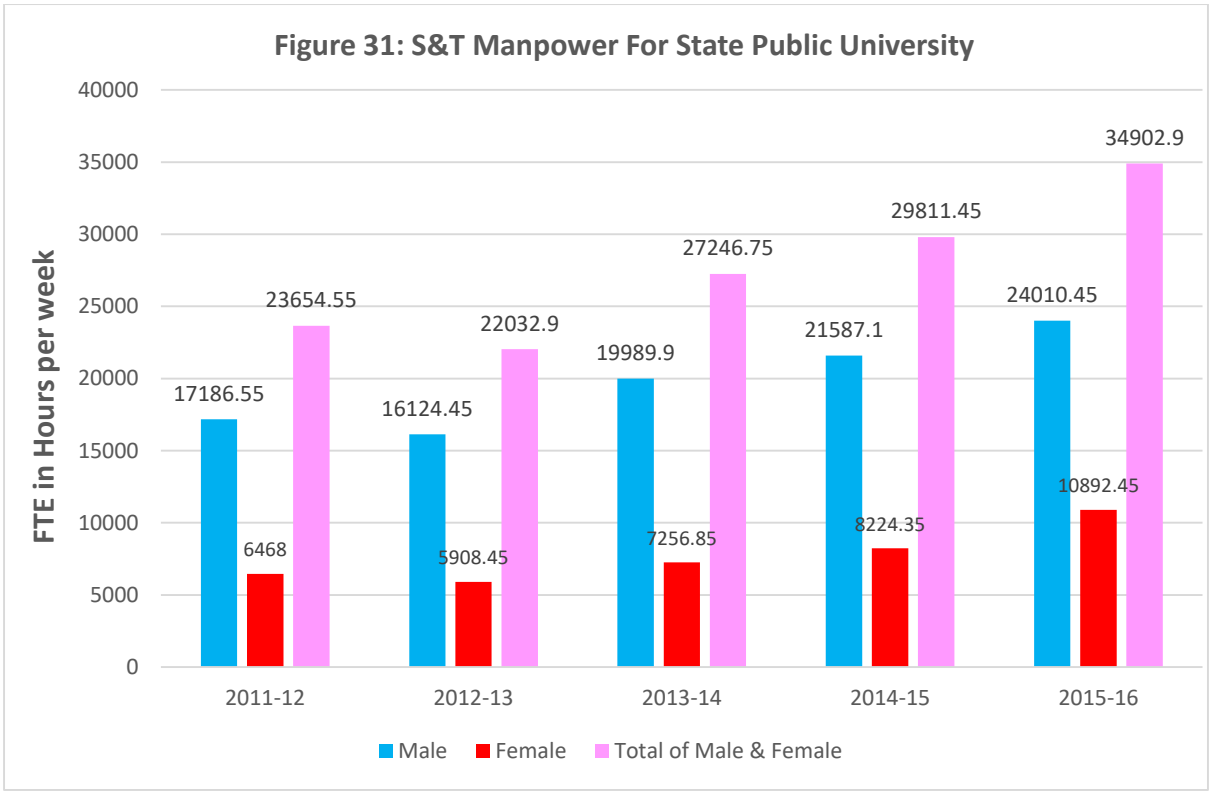


Figure 31: S&T Manpower For State Public University
FTE in Hours per week
40000
35000
30000
25000
20000
15000
10000
5000
0
17186.55
6468
23654.55
16124.45
5908.45
22032.9
19989.9
7256.85
27246.75
21587.1
8224.35
29811.45
24010.45
10892.45
34902.9
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Total of Male & Female

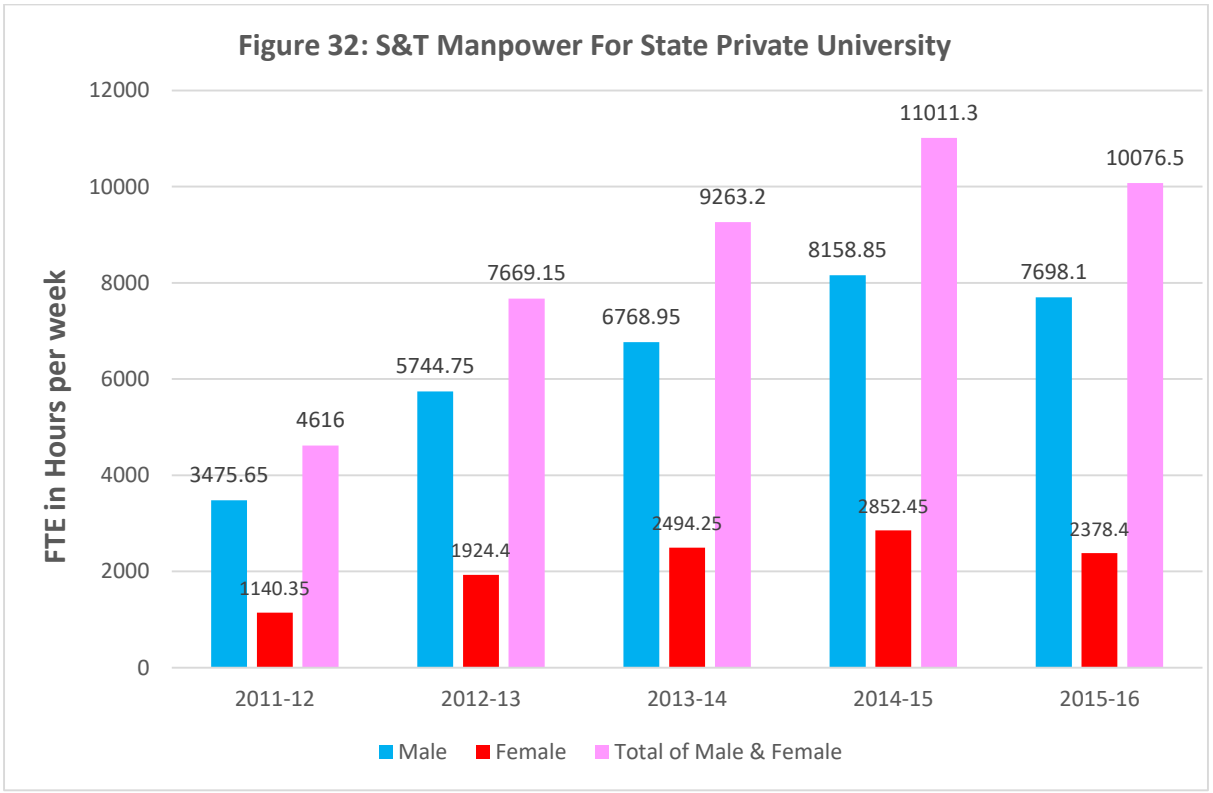


Figure 32: S&T Manpower For State Private University
FTE in Hours per week
12000
10000
8000
6000
4000
2000
0
3475.65
1140.35
4616
5744.75
1924.4
7669.15
6768.95
2494.25
9263.2
8158.85
2852.45
11011.3
7698.1
2378.4
10076.5
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Total of Male & Female

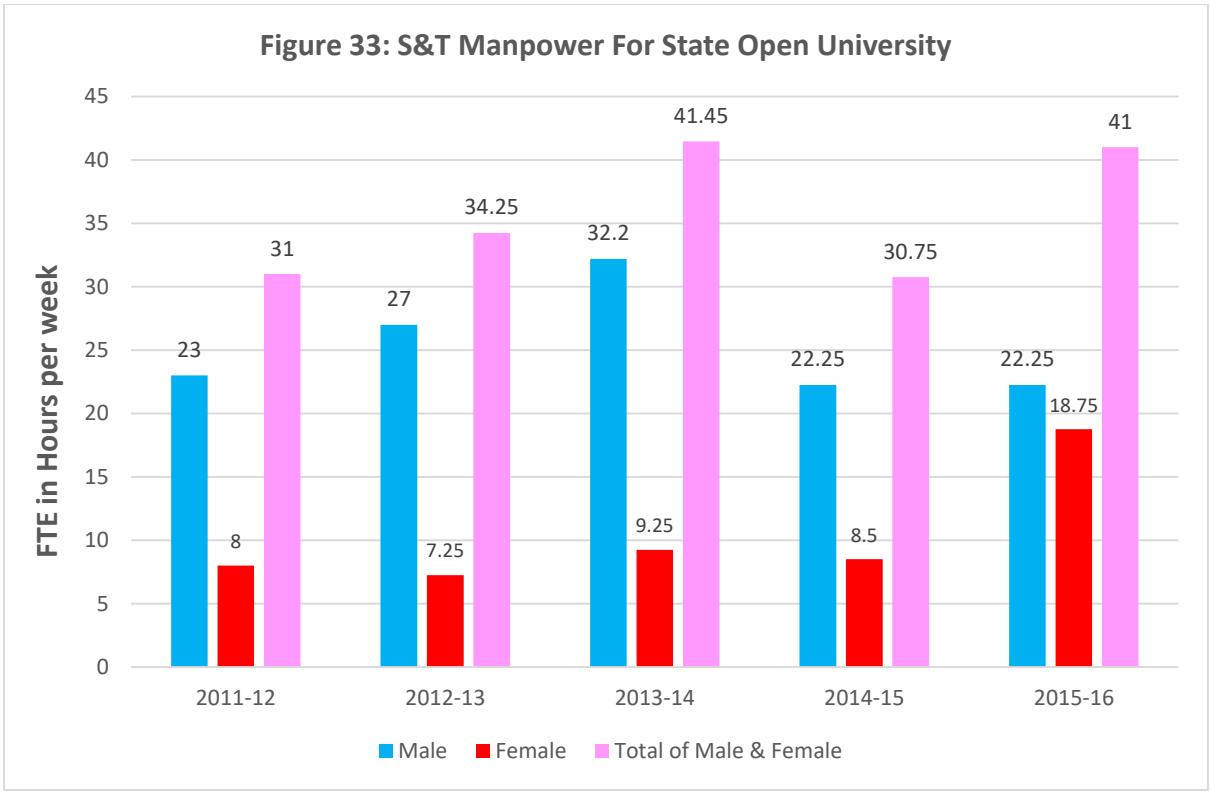


Figure 33: S&T Manpower For State Open University
FTE in Hours per week
45
40
35
30
25
20
15
10
5
0
23
8
31
27
7.25
34.25
32.2
9.25
41.45
22.25
8.5
30.75
22.25
18.75
41
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Total of Male & Female

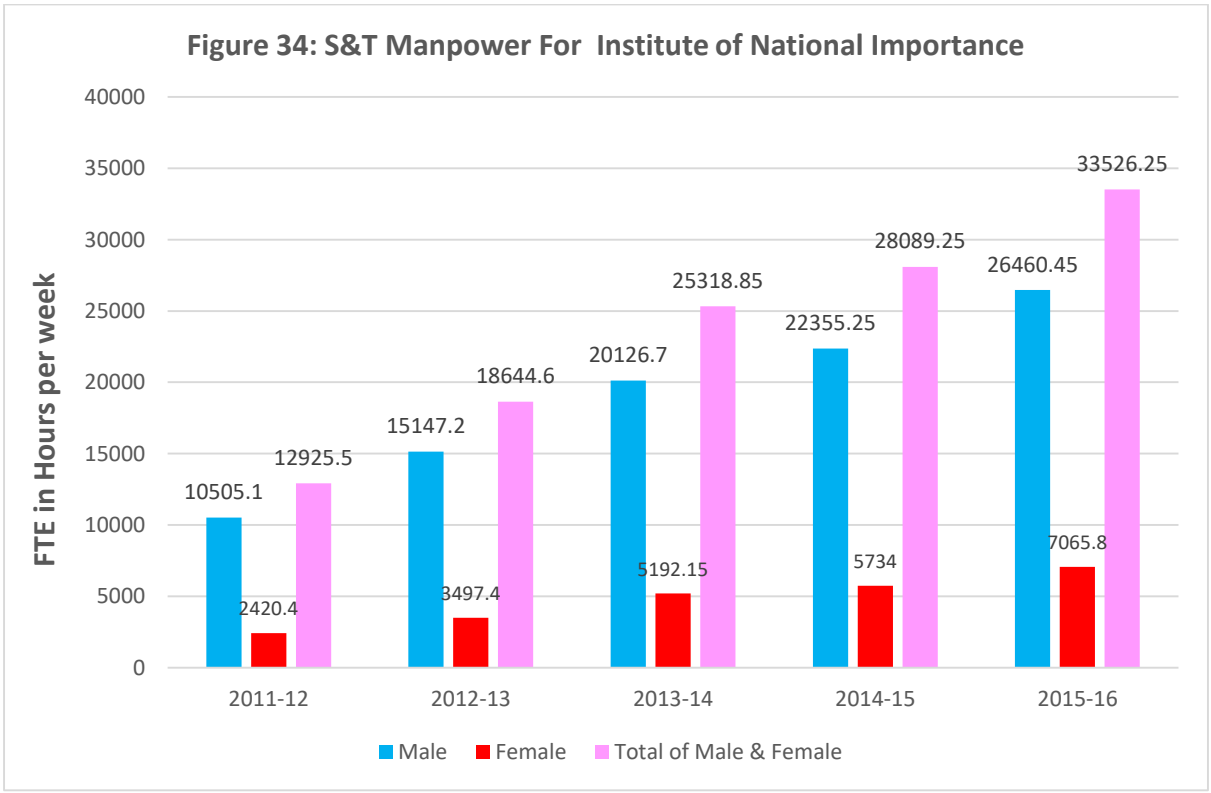


Figure 34: S&T Manpower For Institute of National Importance
FTE in Hours per week
40000
35000
30000
25000
20000
15000
10000
5000
0
10505.1
2420.4
12925.5
15147.2
3497.4
18644.6
20126.7
5192.15
25318.85
22355.25
5734
28089.25
26460.45
7065.8
33526.25
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Total of Male & Female

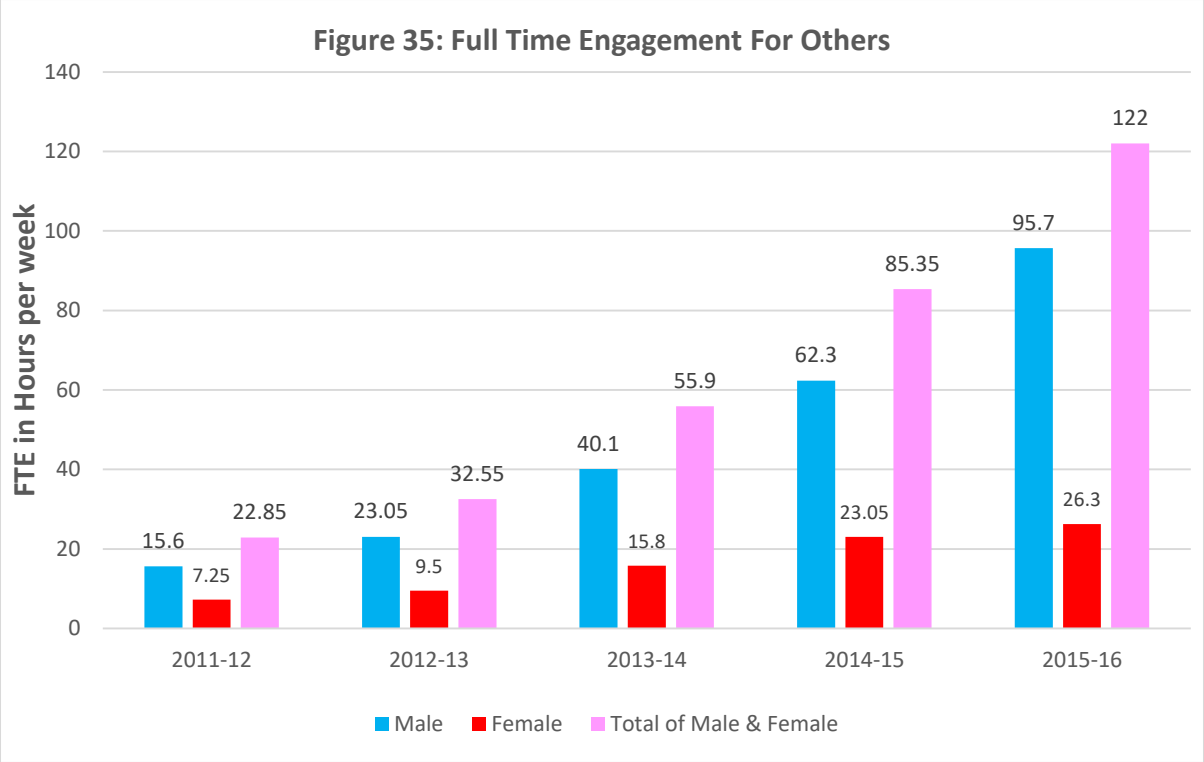


Figure 35: Full Time Engagement For Others
FTE in Hours per week
140
120
100
80
60
40
20
0
15.6
7.25
22.85
23.05
9.5
32.55
40.1
15.8
55.9
62.3
23.05
85.35
95.7
26.3
122
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Total of Male & Female

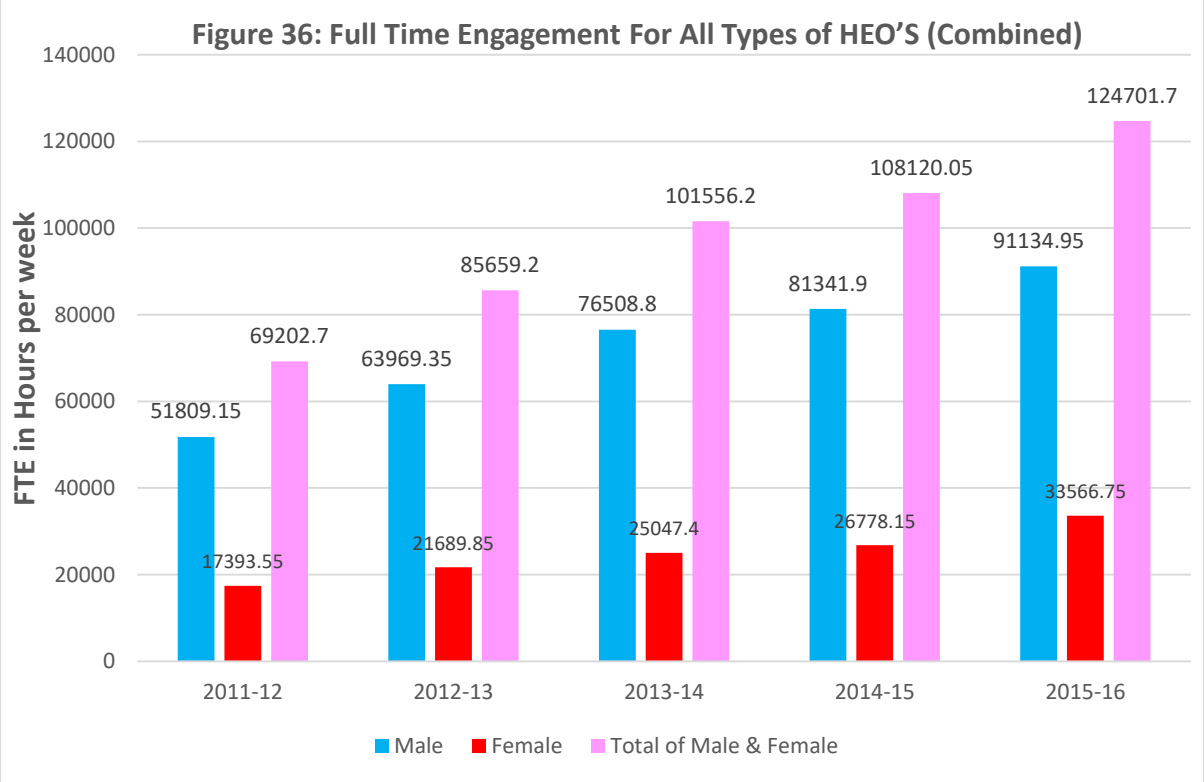


Figure 36: Full Time Engagement For All Types of HEO'S (Combined)
FTE in Hours per week
140000
120000
100000
80000
60000
40000
20000
0
51809.15
17393.55
69202.7
63969.35
21689.85
85659.2
76508.8
25047.4
101556.2
81341.9
26778.15
108120.05
91134.95
33566.75
124701.7
2011-12
2012-13
2013-14
2014-15
2015-16
Male
Female
Total of Male & Female

.

(c) Variation of ERD have no similarity in other 8 Types 2,3,4,5,6,7,8 and 11. Some points are as given below

i. In Type 2 (Central Open University) every alternate year i.e. in 2012 and 2014 there is slight decrease in ERD.

ii. For Type 3 (Deemed Universities Private) after a decrease in 2012 again ERD rises in 2013-14 decrease in 2014-15 and again increases 2015-16.

iii. For Type 4 (Deemed Universities Govt.) there is gradual increase in ERD till 2015-16 except a slight decreases in 2013.

iv. ERD for Type 5(Deemed Universities Govt. Aided) increases from 2011-12 to 2012-13 and then gradually decreases till 2015-16.

v. ERD drops down to become 1/3 of 2011-12 ERD and starts increasing till 2014 and again decreases for type 6(Institutes under Legislature Act).

vi. In Type 7 (State Public Universities) ERD decreases in 2012-13 than the value in 2011-12. ERD is quite high in 2013-14 and again decreases upto2015-16.

vii. For Type 8 (State Private University) ERD is quite high but falls sharply in 2012-13 and continuous to decrease slightly upto 2015-16, even though the number of HEO's increase with advancing years.

Viii. For Type 11(Others) ERD increases till 2013-14 and then decreases in 2014-15 and again rises high(even higher than 2011-12 values).

6.4 The FTE Equivalent Salary Expenditure on R&D Activities in S&T Disciplines (SERD)

Table 5.5 and line diagrams in Figures 49 to 60 show SERD for each of the 11 Types of HEO's for each of the five study years and for all combined types. The comments given in Section 5.4 may be refreshed to note that these show the nature of R&D expenditure in S&T disciplines on payment of FTE equivalent of salary to the S&T teachers and scholarship to PhD and /or higher level students (S_{RES}).

6.4.1 Variation of SERD

The variation of SERD with types and years is summarized below:

i. All the Total SERD values for all the eleven Types of HEO's increase with advancing Years.
ii. Type 7(State Public Universities) has highest SERD followed by Type 3 (Deemed Universities Private) and Type 10 (Institutes of National Importance).
iii. In almost all the type , the values of SERD for males and that for females are also increasing

with advancing years. The few exceptions in this pattern are as given below:

(a) slight fall in value of SERD for males is observed in Type 2 (Central Open University) in 2012-13 and in Type 7(State Public Universities) in 2015 -16 .
(b) slight drops in SERD values in females have been observed in Type 1(Central Universities) in 2013-13, in Type 6(Institutes Under State Legislature Act) in 2014-15 and in Type 9 (State Open Universities) in 2013 -14.

6.5 A Remark

However, it may be kept in mind that all these observations cannot be claimed as perfectly true picture. It should be remembered that

(a) All these estimates of R&D expenses in S&T disciplines (ERD) are based on remaining number of HEO's in each Type due to deletion of some of the reporting HEO's due to (i) No S&T disciplines or (ii) Only UG in S&T disciplines or (iii) Block I E does not show S&T students i.e. $S_{ST}=0$ or $N_{ST}=0$ in all five study years.

(b) Moreover as mentioned in Chapter 4, many expenditure items out of the four, used for estimation of ERD, are not available for some of the remaining HEO's, for all the five study years.

Hence the estimated ERD for all of the 11 types are based on the available number of values of four expenses items which is less than the reporting number of HEO's.

The ERD values are based on these available numbers which are also less than the remaining number of HEO's.

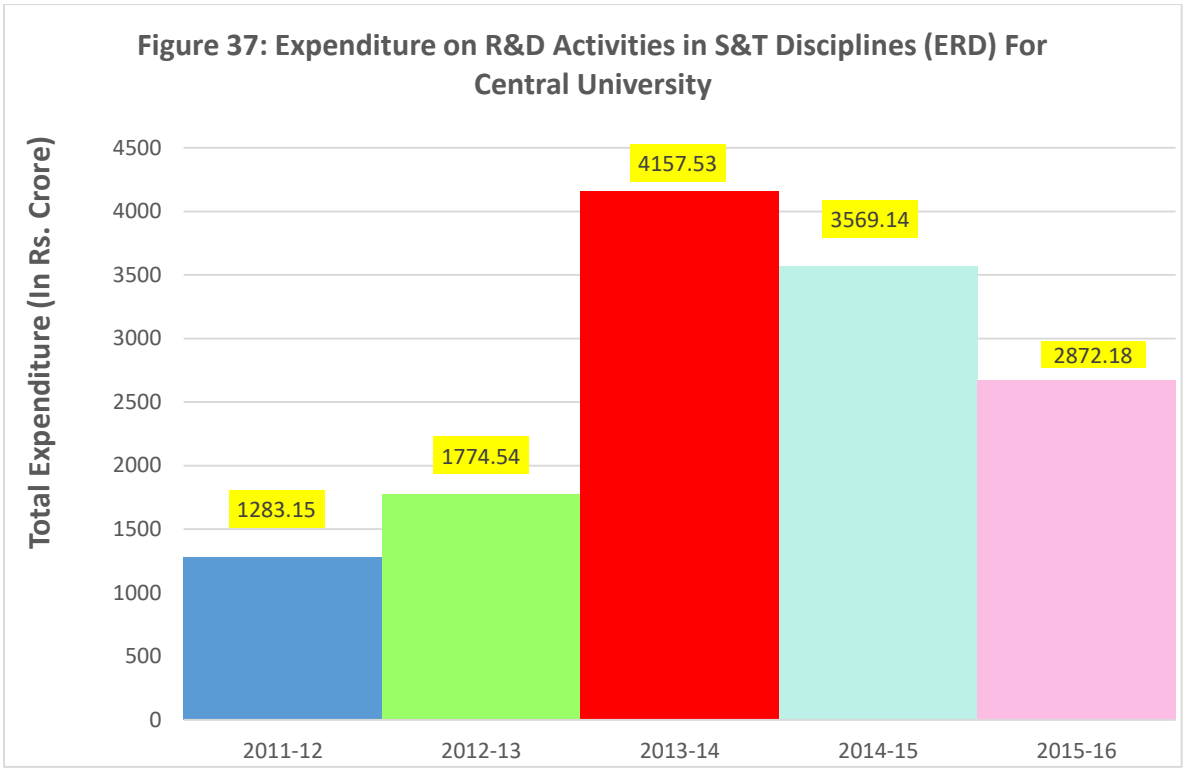
Hence all stated estimates of Manpower (or Total Head Counts), FTE, ERD and SERD are **underestimates** of the true but unknown values. Reason being that the unavailable values (i.e. '0' all five years,) and many adjusted values against missing one or two or three or four years, are likely to introduce departure from the true values.

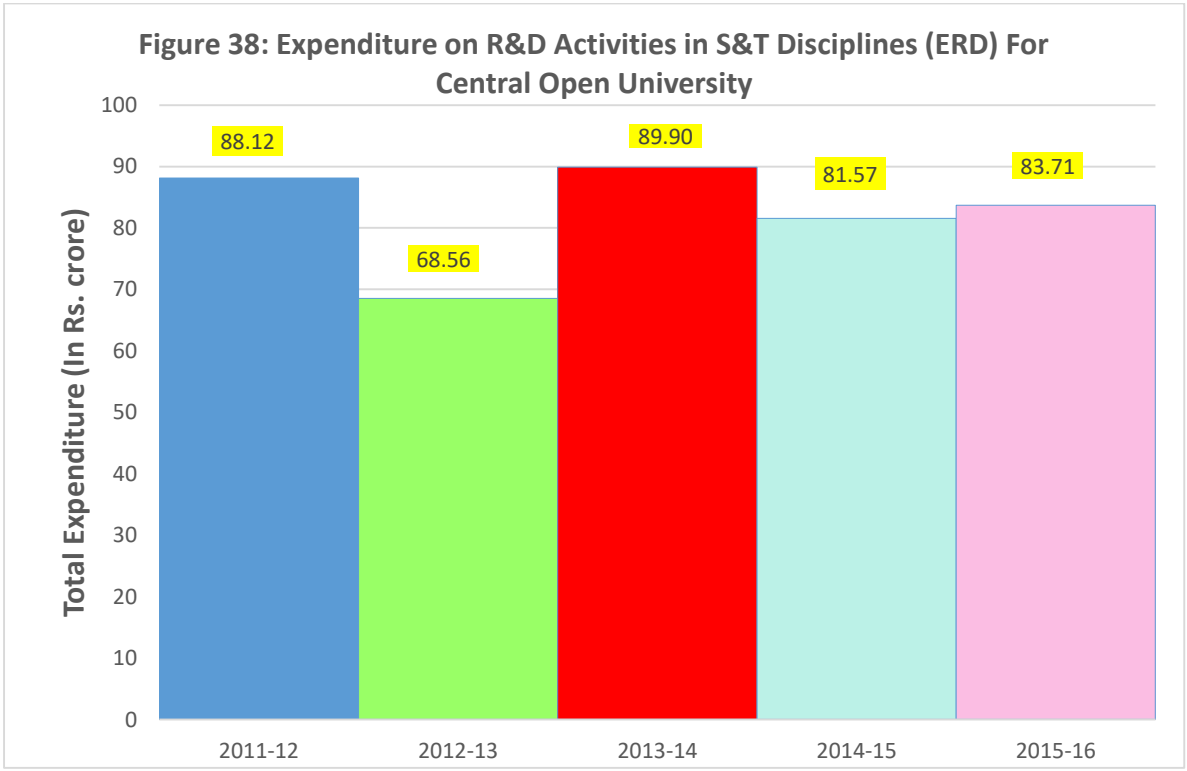
This is because the '0' (Zero) values of expenses can not be zero but some positive value not reported which uploading, is more likely to result in **underestimate**.

6.6 Percentage of Students Enrolment in Categories of Disciplines

It is of interest to know whether there is an inclination of students to enroll in some specific disciplines. Table 5.6a gives distribution of students in the considered 92 disciplines type and year wise (in Appendix).

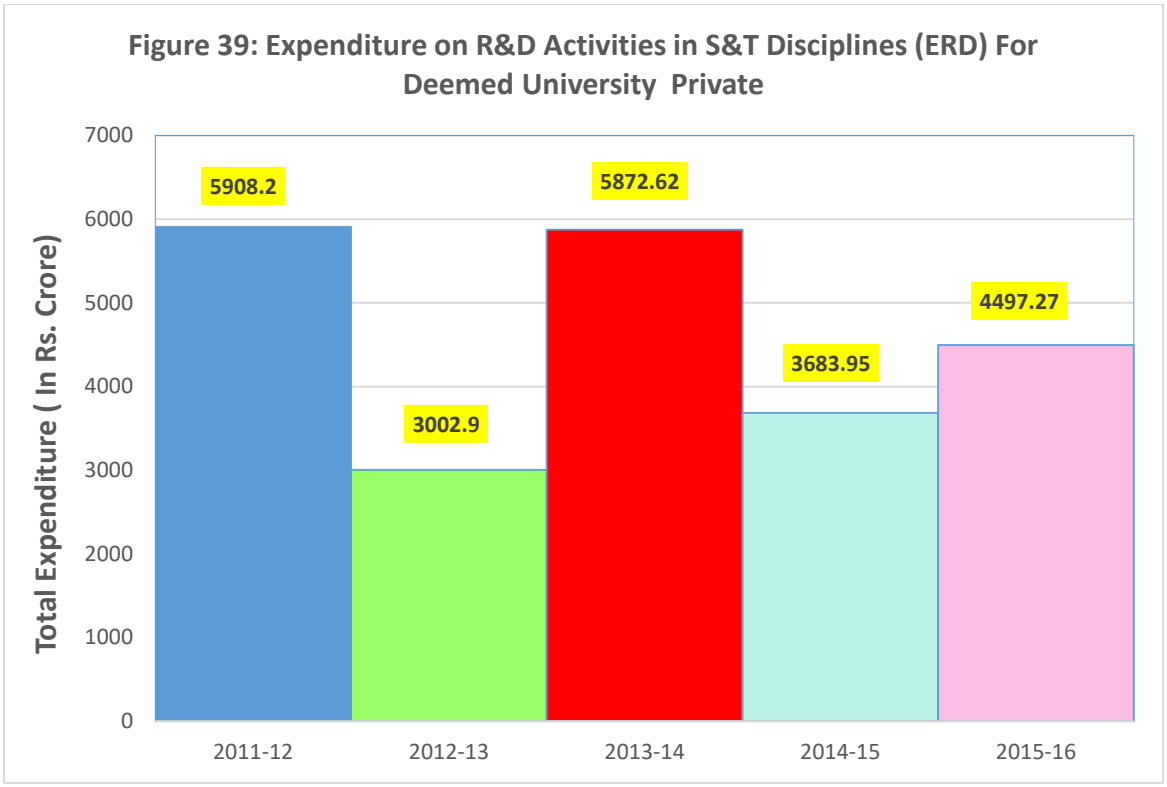
Table 5.7 (in Chapter 5) gives the categories of disciplines according to percentage of enrolments.

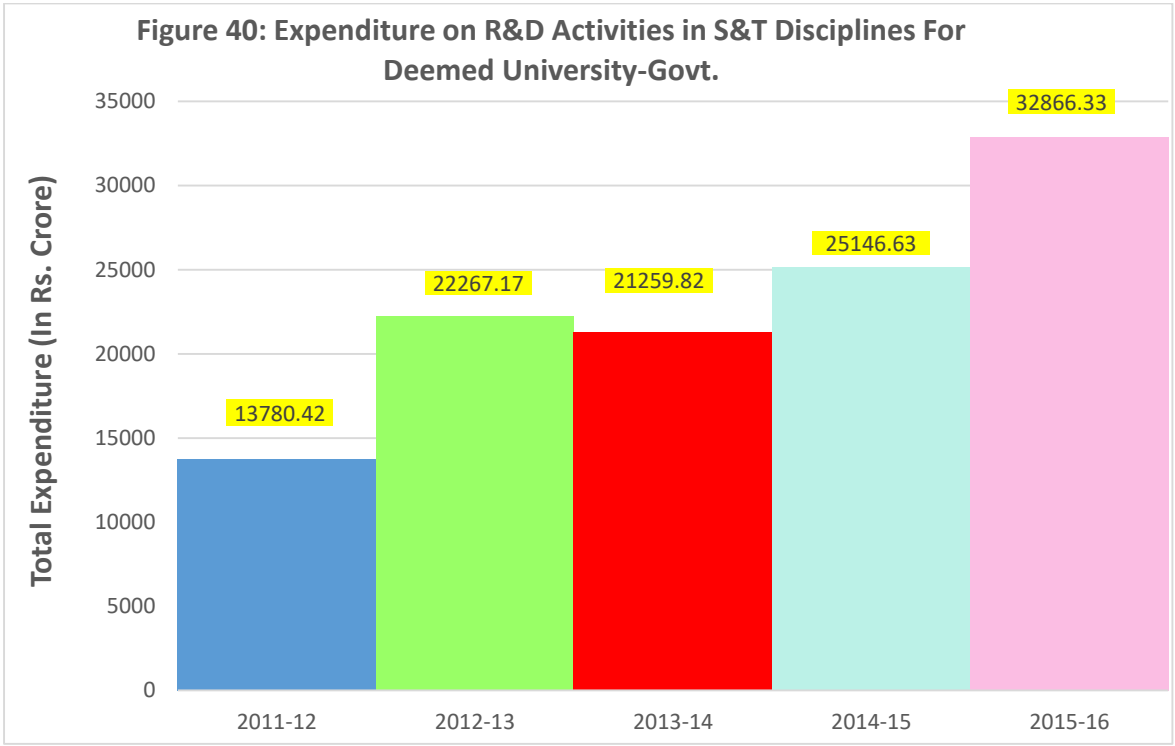




NOTE 1- Includes Expenses on Salary, Scholarships, Library & Laboratory and Research Activities

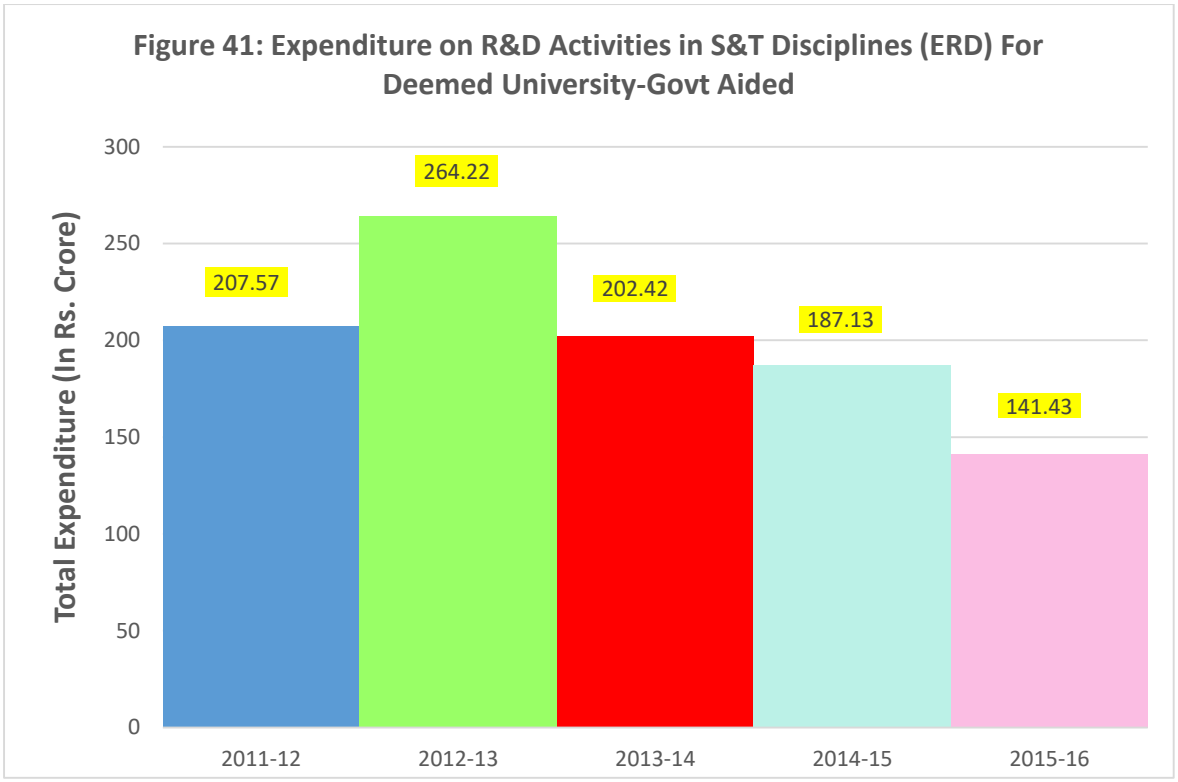
NOTE 2- 1 Crore =10^7 *1 Billion = 10^9*

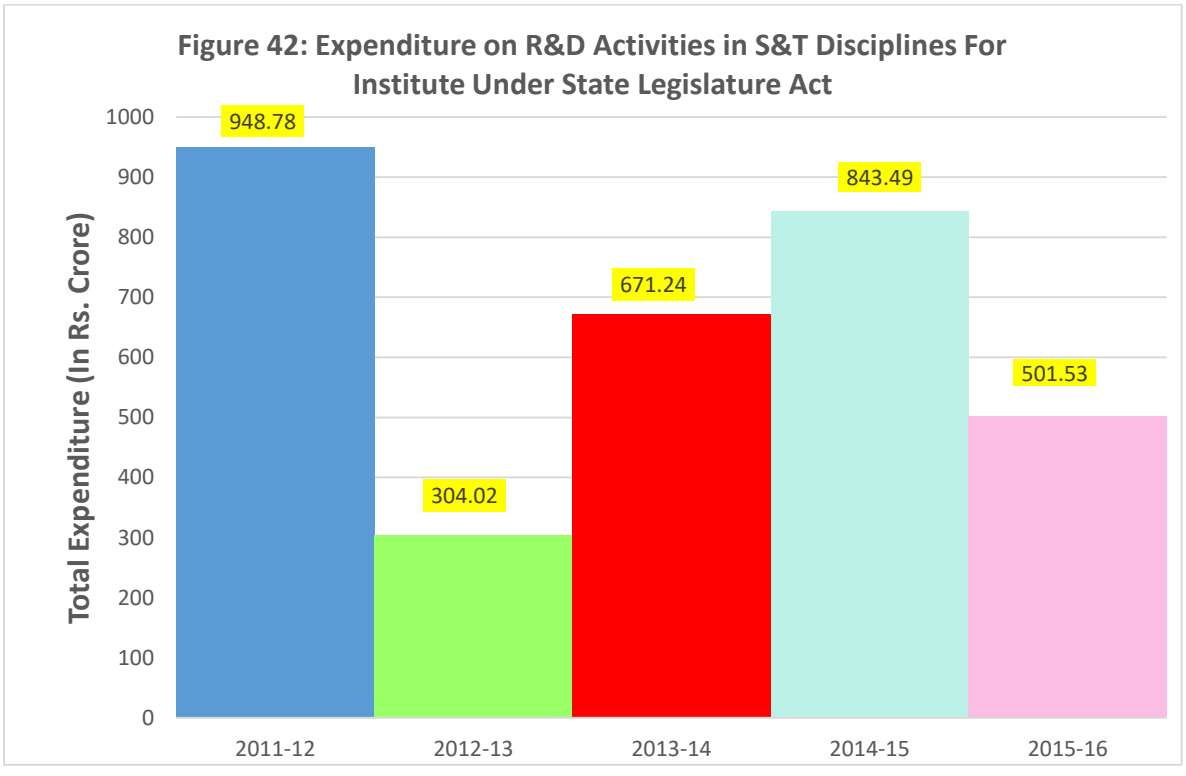




NOTE 1- Includes Expenses on Salary, Scholarships, Library & Laboratory and Research Activities

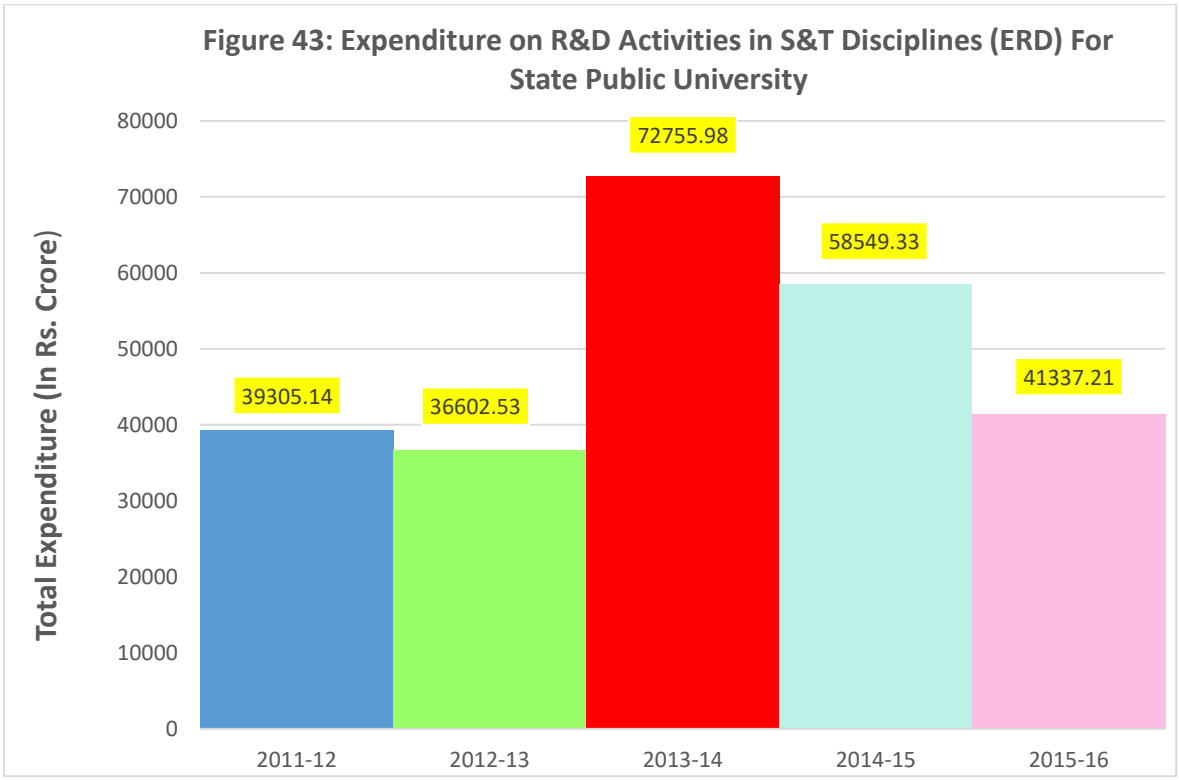
NOTE 2- 1 Crore =10^7 *1 Billion = 10^9*

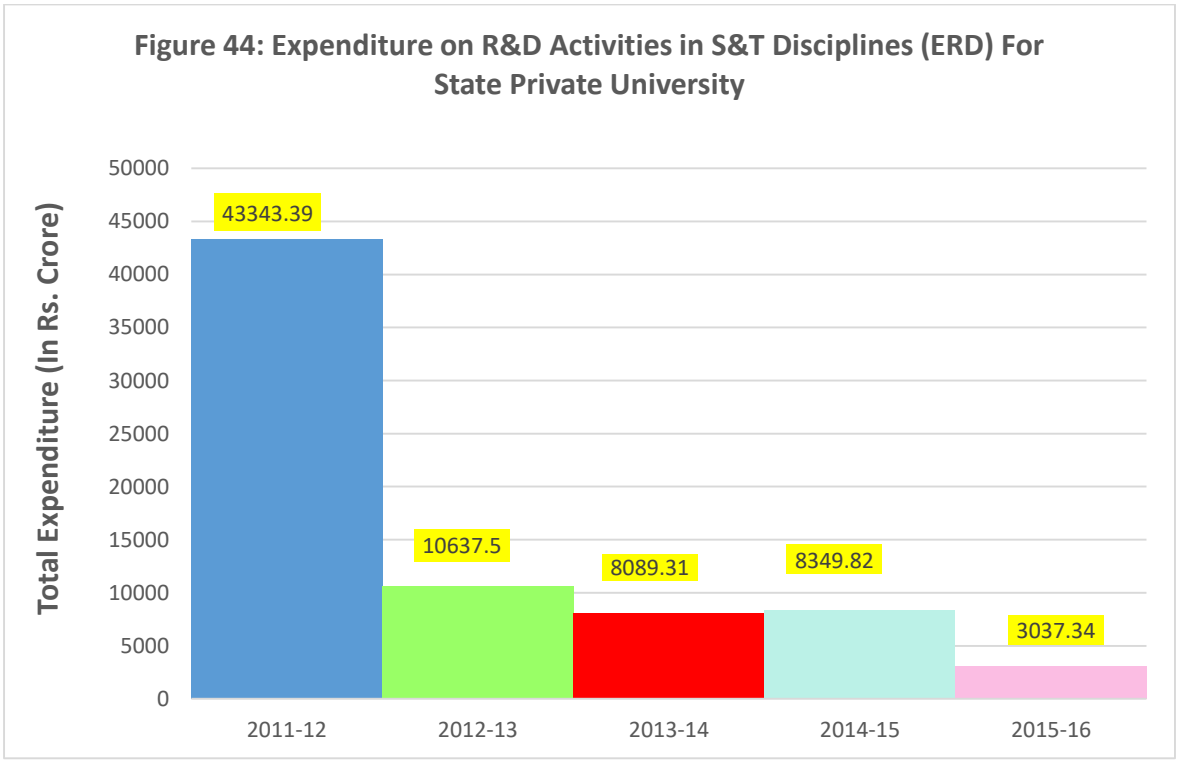




NOTE 1- Includes Expenses on Salary, Scholarships, Library & Laboratory and Research Activities

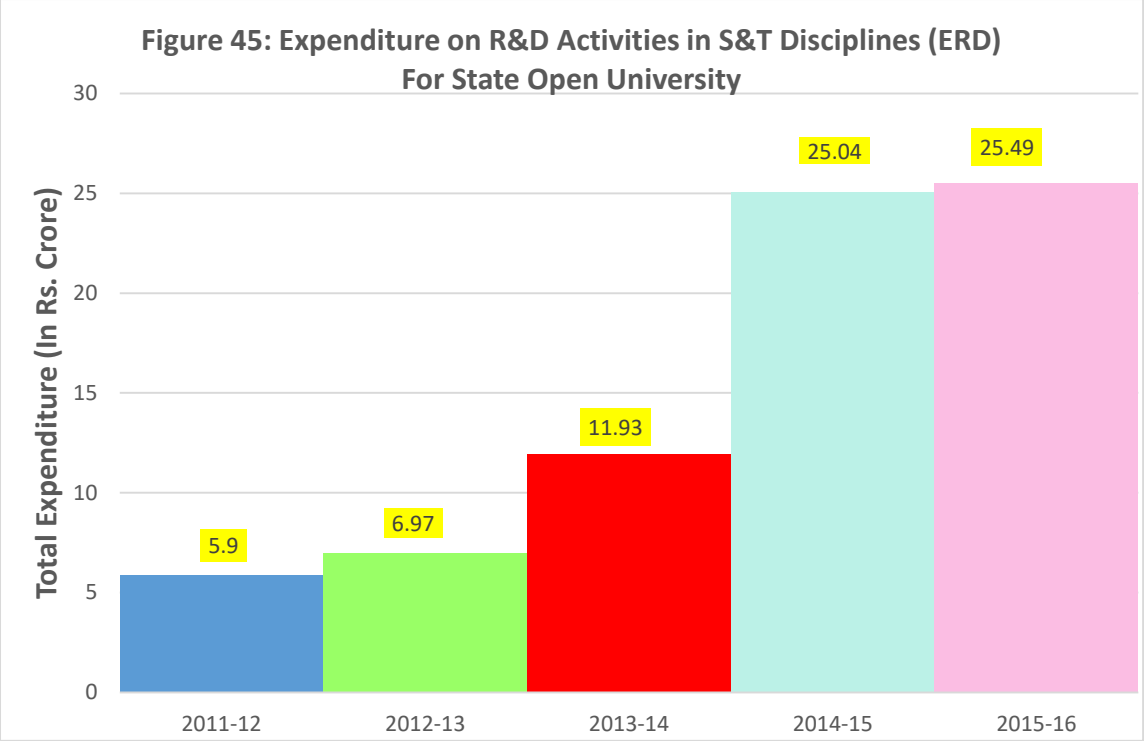
NOTE 2- 1 Crore =10^7 *1 Billion = 10^9*

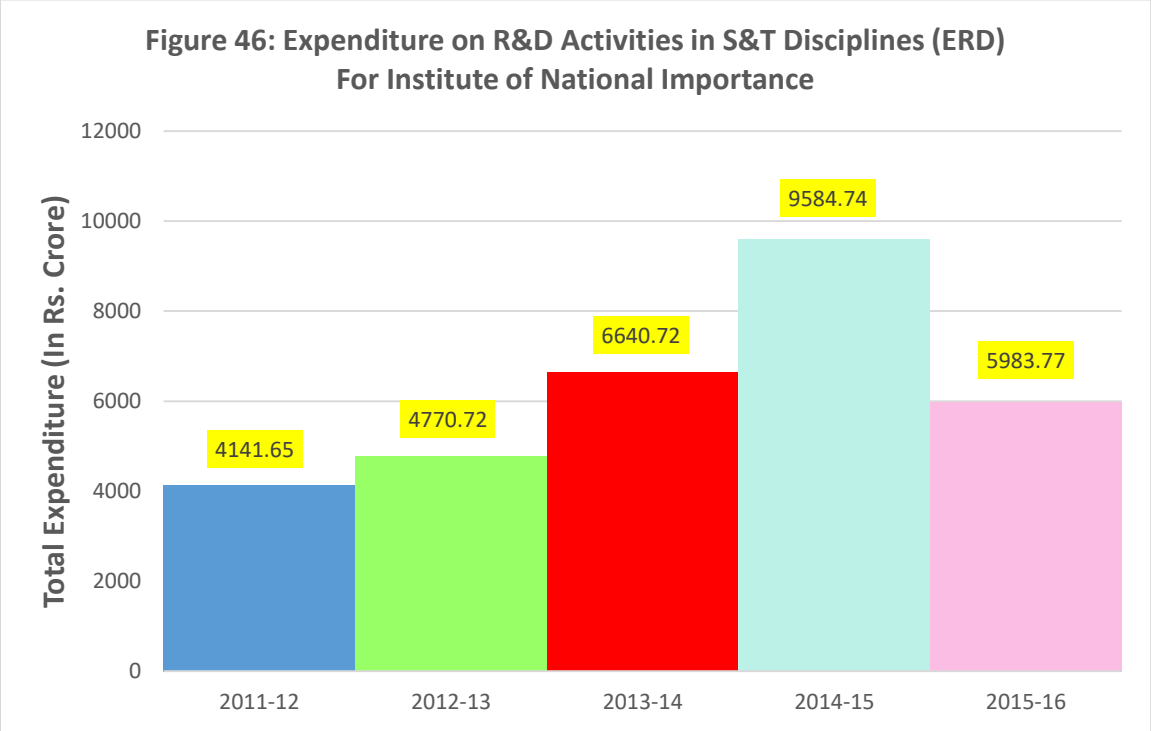




NOTE 1- Includes Expenses on Salary, Scholarships, Library & Laboratory and Research Activities

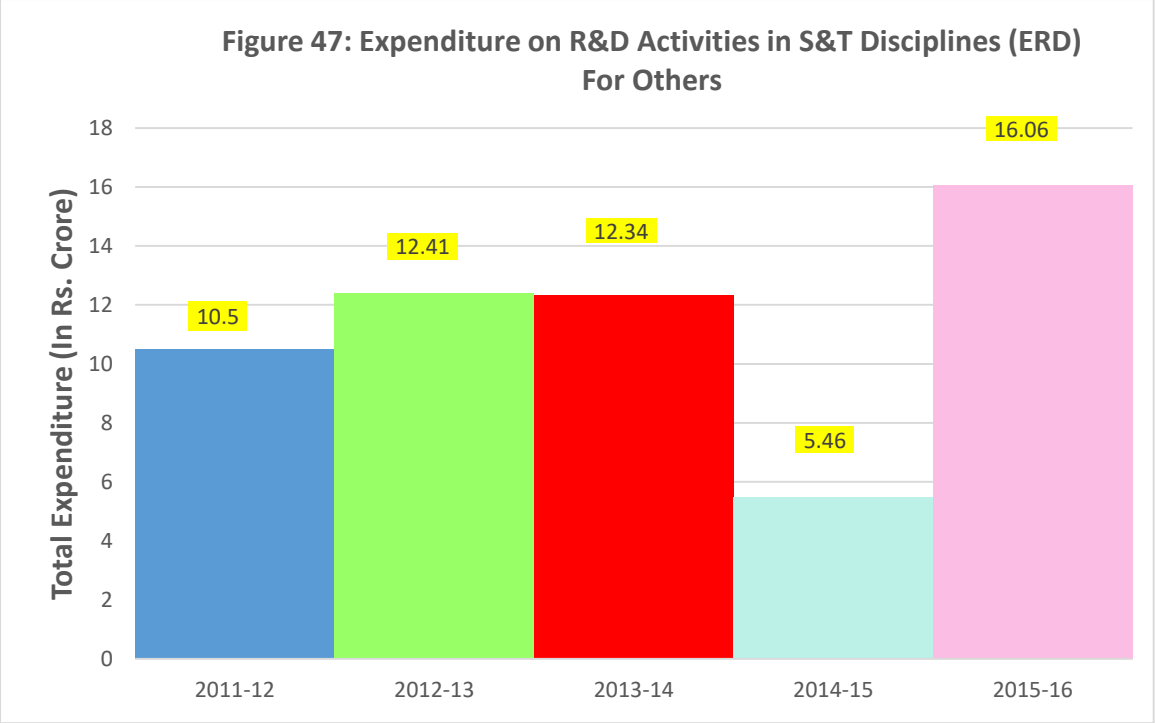
NOTE 2- 1 Crore =10^7 *1 Billion = 10^9*

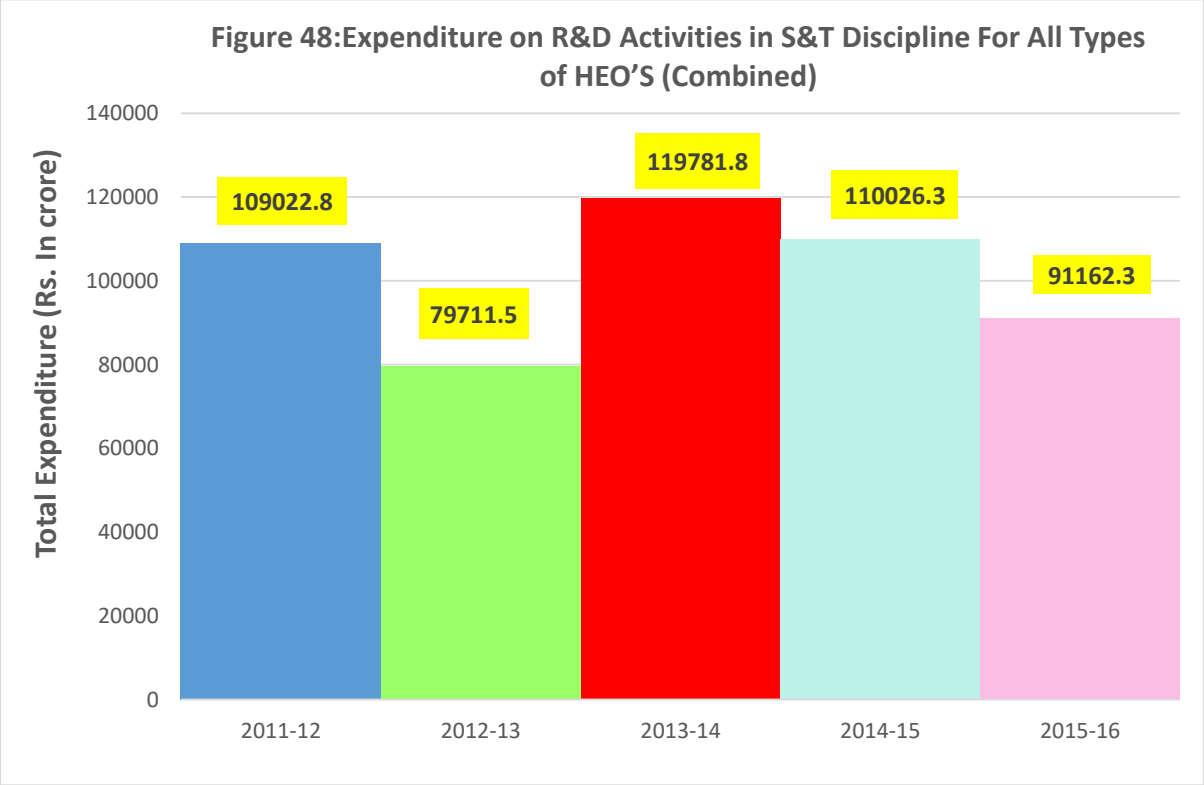




NOTE 1- Includes Expenses on Salary, Scholarships, Library & Laboratory and Research Activities

NOTE 2- 1 Crore =10^7 *1 Billion = 10^9*





NOTE 1- Includes Expenses on Salary, Scholarships, Library & Laboratory and Research Activities

NOTE 2- 1 Crore =10^7 *1 Billion = 10^9*

The significant findings are summarized as follows.

1. The three disciplines 71. Chemistry, 78. Mathematics and 80. Physics have $5<P\leq10.5$ in all the four years except in 2013-14.
2. Three more disciplines 20. Other Engineering & Technology 28. Computer Application and 29. Computer Science also have equally high percentage in 2011-12, 2014-15 and 2015-16.
3. 28. Computer Application has high percentage of enrollment in all the five years and 90. New Engineering and Technology has highest percentage (=10.411) of enrollment in 2012-13.
4. It is a good sign that 5 or more disciplines viz.
   10. Computer Engineering
   20. Other Engineering & Technology
   28. Computer Application
   29. Computer Science
   71. Chemistry
   78. Mathematics
   80. Physics
   Have been chosen by 5% or more students in each of the five study years except in 2013-14, when only 28. Computer Application has $5\%\leq P<10.4\%$.

5. Slightly larger number of disciplines 7 to 10 have percentages of students'enrollment in both the two ranges of $2\leq P<5$ and $1\leq P<2$

   There disciplines are
   1.Agriculture 9. Civil Engineering 10. Computer Engineering
   12. Electrical Engineering 13. Electronics Engineering 15. Information Technology
   17. Mechanical Engineering 20. Mining Engineering 26. Home Science
   29. Computer Science 36. Bio Technology 50. Microbiology (of Med. Sc.)
   56. Orthopedics 59. Pharmacy 67. Bio- chemistry 68. Bio- science 69. Bio Technology 70. Botany 71. Chemistry 73.Environmental Science 75. Geology
   77. Life Sciences 79. Microbiology(of Science) 82. Statistics 83. Zoology 85. Economics (with M.Sc. degree) 90. New Engineering & Technology 92. Other Science

6. 65. Disciplines out of 92 have <1% students' enrollment in all the five years except in 2013-14 when there are 74 disciplines with < 1% students' enrollment. It appears that many students did not qualify for enrollment in disciplines which had in other four years highest percentage ($5\%\leq P<10.4\%$) enrolment.

Table: 5.2a Total Numbers of S& T Students, Teachers and Manpower, Type-wise, Year-wise Broad Discipline-wise and Gender-wise

YEARS: 2011-12 **TYPE 1: Central University**

Broad Discipline	Manpower		
	M	F	Total
Agriculture	1435	334	1769
Computer	4253	1443	5696
Engineering and Technology	3931	782	4713
Fisheries Science	17	3	20
Home Science	359	270	629
Marine Science / Oceanography	158	26	184
Medical Science	185	44	229
Science	17519	7100	24619
Veterinary & Animal Sciences	85	10	95
Total	27942	10012	37954

YEARS: 2012-13 **TYPE 1: Central University**

Broad Discipline	Manpower		
	M	F	Total
Agriculture	2206	588	2794
Computer	3071	998	4069
Engineering and Technology	1532	296	1828
Fisheries Science	17	3	20
Home Science	371	294	665
Marine Science / Oceanography	84	16	100
Medical Science	1393	344	1737
Science	21654	8890	30544
Veterinary & Animal Science	80	17	97
Total	30408	11446	41854

YEARS: 2013-14 **TYPE 1: Central University**

Broad Discipline	Manpower		
	M	F	TOTAL
Agriculture	1906	531	2437
Computer	2799	749	3548
Engineering and Technology	3063	807	3870

Contd.

Fisheries Science	17	3	20
Home Science	305	231	536
Marine Science	100	33	133
Medical Science	2161	579	2740
Science	26108	11386	37494
Veterinary & Animal Sciences	95	20	115
Total	37404	14339	51743

YEARS: 2014-15 **TYPE 1: Central University**

Broad Discipline	**Manpower**		
	M	**F**	**TOTAL**
Agriculture	1949	529	2478
Computer	4267	1429	5696
Engineering and Technology	4526	1112	5638
Fisheries Science	17	3	20
Home Science	345	279	624
Marine Science / Oceanography	103	16	119
Medical Science	2166	608	2774
Science	26800	11670	38470
Veterinary & Animal science	72	17	89
Total	40248	15663	55911

YEARS-2015-16 **TYPE1: Central University**

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	2049	627	2676
Computer	4061	1355	5416
Engineering and Technology	2204	491	2695
Fisheries Science	17	3	20
Home Science	369	313	682
Marine Science	5	0	5
Marine Science / Oceanography	41	9	50
Medical Science	1888	463	2351
Science	27722	11595	39317
Veterinary & Animal Science	76	17	93
Total	38432	14873	53305

Contd.

YEARS: 2011-12 **TYPE 2: Central Open University**

Broad Discipline	Manpower		
	M	F	Total
Agriculture	8	1	9
Computer	8	0	8
Engineering and Technology	20	3	23
Medical Science	10	6	16
Science	109	50	159
Total	155	60	215

YEARS: 2012-13 **TYPE2: Central Open University**

Broad Discipline	Manpower		
	M	F	Total
Agriculture	9	3	12
Computer	18	2	20
Engineering and Technology	33	6	39
Medical Science	9	6	15
Science	112	55	167
Veterinary & Animal Sciences	4	3	7
Total	185	75	260

YEARS: 2013-14 **TYPE 2: Central Open University**

Broad Discipline	Manpower		
	M	F	Total
Agriculture	8	3	11
Computer	7	0	7
Engineering and Technology	16	4	20
Medical Science	9	6	15
Science	56	25	81
Total	96	38	134

YEARS: 2014-15 **TYPE 2: Central Open University**

Broad Discipline	Manpower		
	M	F	Total
Agriculture	10	5	15
Computer	7	0	7
Engineering and Technology	15	3	18
Medical science	8	5	13
Science	60	29	89

Contd.

Veterinary & Animal Sciences	0	0	0
Total	100	42	142

YEARS: 2015-16 **TYPE 2: Central Open University**

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	12	5	17
Computer	7	0	7
Engineering and Technology	16	4	20
Medical science	12	7	19
Science	58	28	86
Total	105	44	149

YEARS: 2011-12 **TYPE 3: Deemed University Private**

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	108	28	136
Computer	10872	4671	15543
Engineering and Technology	33108	13071	46179
Home Science	460	455	915
Humanities and Social Sciences	1	1	2
Medical Science	12649	5824	18473
Science	14929	7406	22335
Total	72127	31456	103583

YEARS: 2012-13 **TYPE 3: Deemed University Private**

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	99	36	135
Computer	10856	4898	15754
Engineering and Technology	38891	14898	53789
Home Science	461	451	912
Medical Science	14804	6624	21428
Science	15200	7772	22972
Total	80311	34679	114990

Contd.

YEARS: 2013-14 **TYPE 3: Deemed University Private**

Broad Discipline	Manpower		
	M	F	Total
Agriculture	130	48	178
Computer	9958	4792	14750
Engineering and Technology	40287	15777	56064
Home Science	400	368	768
Medical Science	11835	5383	17218
Science	16475	8063	24538
Total	79085	34431	113516

YEARS: 2014-15 **TYPE 3: Deemed University Private**

Broad Discipline	Manpower		
	M	F	Total
Agriculture	98	37	135
Computer	10961	4167	15128
Engineering and Technology	35466	12809	48275
Home Science	696	669	1365
Medical Science	11595	5348	16943
Science	16386	8878	25264
Total	75202	32066	107268

YEARS: 2015-16 **TYPE 3: Deemed University Private**

Broad Discipline	Manpower		
	M	F	Total
Agriculture	121	54	175
Computer	6994	3423	10417
Engineering and Technology	25776	10254	36030
Home Science	95	75	170
Marine Science	7	5	12
Medical Science	14443	6798	21241
Science	16648	8611	25259
Total	64084	29220	93304

YEARS: 2011-12 **TYPE 4: Deemed University-Government**

Broad Discipline	Manpower		
	M	F	Total
Agriculture	1146	263	1409
computer	40	7	47
Engineering and	6951	1489	8440

Contd.

Technology			
Fisheries Science	353	112	465
Marine Science / Oceanography	15	2	17
Medical Science	578	214	792
science	4600	1148	5748
Veterinary & Animal Sciences	610	145	755
Total	14293	3380	17673

YEARS: 2012-13 **TYPE 4: Deemed University-Government**

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	1920	565	2485
Computer	41	15	56
Engineering and Technology	7473	1672	9145
Fisheries Science	403	128	531
Medical Science	680	270	950
Science	5386	1448	6834
Veterinary & Animal Sciences	606	99	705
Total	16509	4197	20706

YEARS: 2013-14 **TYPE 4: Deemed University-Government**

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	1158	272	1430
Computer	92	26	118
Engineering and Technology	7508	1542	9050
Fisheries Science	433	134	567
Marine Science / Oceanography	36	8	44
Medical Science	772	278	1050
Science	5290	1444	6734
Veterinary & Animal Sciences	557	116	673
Total	15846	3820	19666

YEARS: 2014-15 **TYPE4: Deemed University-Government**

Broad Discipline	**Manpower**		
	M	**F**	**Total**

Contd.

Agriculture	1065	248	1313
Computer	373	98	471
Engineering and Technology	9231	2088	11319
Fisheries Science	494	161	655
Home Science	16	3	19
Medical Science	931	394	1325
Science	5506	1675	7181
Veterinary & Animal Sciences	1042	319	1361
Total	18658	4986	23644

YEARS: 2015-16 TYPE 4: Deemed University-Government

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	586	232	818
Computer	160	56	216
Engineering and Technology	9537	2077	11614
Fisheries Science	535	167	702
Medical Science	950	418	1368
Science	6008	1953	7961
Veterinary & Animal Sciences	1652	537	2189
Total	19428	5430	24858

YEARS: 2011-12 TYPE5: Deemed University-Government Aided

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	874	231	1105
Computer	964	433	1397
Engineering and Technology	4984	2416	7400
Home Science	398	321	719
Medical Science	314	158	472
Science	722	348	1070
Veterinary & Animal Sciences	124	29	153
Total	8379	3936	12315

YEARS: 2012-13 TYPE 5: Deemed University-Government Aided

Broad Discipline	**Manpower**		
	M	**F**	**Total**

Agriculture	679	104	783
Computer	1194	405	1599
Engineering and Technology	2072	595	2667
Home Science	371	369	740
Medical Science	992	456	1448
Science	3041	1800	4841
Veterinary & Animal Sciences	21	5	26
Total	8370	3734	12104

YEARS: 2013-14 TYPE5: Deemed University-Government Aided

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	759	133	892
Computer	1303	492	1795
Engineering and Technology	1760	466	2226
Home Science	407	387	794
Medical Science	1197	585	1782
Science	2910	1676	4586
Veterinary & Animal Sciences	71	9	80
Total	8407	3748	12155

YEARS: 2014-15 TYPE5: Deemed University-Government Aided

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	688	143	831
Computer	1174	515	1689
Engineering and Technology	1187	337	1524
Home Science	304	256	560
Medical Science	1206	633	1839
Science	3548	2167	5715
Veterinary & Animal Sciences	151	27	178
Total	8258	4078	12336

YEARS: 2015-16 TYPE5: Deemed University-Government Aided

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	874	231	1105

Contd.

Computer	964	433	1397
Engineering and Technology	199	76	275
Home Science	398	321	719
Medical Science	314	158	472
Science	740	348	1088
Veterinary & Animal Sciences	124	29	153
Total	3613	1596	5209

YEARS: 2011-12 TYPE 6: Institute under State Legislature Act

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Medical Science	838	284	1122
Science	48	24	72
Total	886	308	1194

YEARS: 2012-13 TYPE 6: Institute under State Legislature Act

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Medical Science	910	245	1155
Science	44	24	68
Total	954	269	1223

YEARS: 2013-14 TYPE 6: Institute under State Legislature Act

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Medical Science	1269	365	1634
Science	56	29	85
Total	1325	394	1719

YEARS: 2014-15 TYPE 6: Institute under State Legislature Act

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Medical Science	1273	344	1617
Science	63	27	90
Total	1336	371	1707

YEARS: 2015-16 TYPE 6: Institute under State Legislature Act

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Medical Science	1048	295	1343

Science	48	23	71
Total	1096	318	1414

YEARS: 2011-12 **TYPE 7: State Public University**

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	10057	3369	13426
Computer	23960	7486	31446
Engineering and Technology	12185	4200	16385
Fisheries Science	88	16	104
Home Science	1771	1434	3205
Marine Science / Oceanography	718	350	1068
Medical Science	7216	2935	10151
Science	74166	36682	110848
Veterinary & Animal Sciences	2278	533	2811
Total	132439	57005	189444

YEARS: 2012-13 **TYPE 7: State Public University**

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	14173	4498	18671
Computer	24783	8685	33468
Engineering and Technology	13892	4121	18013
Fisheries Science	310	128	438
Home Science	2478	2126	4604
Marine Science / Oceanography	919	425	1344
Medical Science	7456	3118	10574
Science	86187	43718	129905
Veterinary & Animal Science	1571	299	1870
Total	151769	67118	218887

YEARS: 2013-14 **TYPE 7: State Public University**

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	15390	5165	20555
Computer	27581	13571	41152
Engineering and Technology	29647	10180	39827
Fisheries Science	1353	801	2154
Home Science	3024	2374	5398
Marine Science /	852	365	1217

Contd.

Oceanography			
Medical Science	7304	3077	10381
Science	88350	44898	133248
Veterinary & Animal Sciences	1575	480	2055
Total	175076	80911	255987

YEARS: 2014-15 **TYPE 7: State Public University**

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	15856	5113	20969
Computer	28340	14492	42832
Engineering and Technology	38178	13526	51704
Fisheries Science	595	266	861
Home Science	2348	1851	4199
Marine Science / Oceanography	1390	707	2097
Medical Science	6160	3016	9176
Science	85024	44196	129220
Veterinary & Animal Sciences	1741	436	2177
Total	179632	83603	263235

YEARS:2015-16 **TYPE 7: State Public University**

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	12465	4650	17115
Computer	23958	12336	36294
Engineering and Technology	22209	8842	31051
Fisheries Science	541	284	825
Home science	2498	2092	4590
Marine Science / Oceanography	699	337	1036
Medical science	5808	2824	8632
Science	97927	52762	150689
Veterinary & Animal Sciences	838	235	1073
Total	166943	84362	251305

YEARS: 2011-12 **TYPE 8: State Private University**

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	77	24	101
Computer	7295	2517	9812

Engineering and Technology	12895	4611	17506
Home Science	88	66	154
Medical Science	4655	1970	6625
Science	4909	2713	7622
Veterinary & Animal Sciences	17	2	19
Total	29936	11903	41839

YEARS: 2012-13 **TYPE 8: State Private University**

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	200	36	236
Computer	11016	3793	14809
Engineering and Technology	26388	7829	34217
Home Science	229	148	377
Medical Science	6689	2919	9608
Science	8643	4414	13057
Veterinary & Animal Sciences	2	0	2
TOTAL	53167	19139	72306

YEARS: 2013-14 **TYPE 8: State Private University**

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	719	110	829
Computer	11132	3743	14457
Engineering and Technology	28171	8102	36691
Home Science	709	375	1084
Medical Science	7133	2988	10121
Science	9020	5196	14216
Veterinary & Animal Sciences	3	0	3
Total	56887	20514	77401

YEARS: 2014-15 **TYPE 8: State Private University**

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Engineering and Technology	25155	8149	33304
Computer	10594	3918	14512
Science	11409	5887	17296

Contd.

Medical Sciences	8420	3486	11906
Agriculture	901	112	1013
Home Science	218	144	362
Veterinary & Animal Sciences	3	0	3
Total	56700	21696	78396

YEARS: 2015-16 **TYPE 8: State Private University**

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	639	136	775
Computer	7240	2608	9848
Engineering and Technology	20016	5758	25774
Home Science	191	138	329
Medical Science	7046	2853	9899
Science	11752	6340	18192
Veterinary & Animal Sciences	6	1	7
Total	46890	17834	64824

YEARS: 2011-12 **TYPE 9: State Open University**

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	1	1	2
Computer	6	5	11
Engineering and Technology	2	2	4
Home Science	2	2	4
Science	35	6	41
TOTAL	46	16	62

YEARS: 2012-13 **TYPE 9: State Open University**

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	1	0	1
Computer	5	1	6
Engineering and Technology	3	2	5
Home Science	0	0	0
Science	35	12	47

Contd.

TOTAL	44	15	59

YEARS: 2013-14 **TYPE 9: State Open University**

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	1	0	1
Computer	11	4	15
Engineering and Technology	4	3	7
Home Science	2	2	4
Medical Science	3	1	4
Science	38	9	47
TOTAL	59	19	78

YEARS: 2014-15 **TYPE9: State Open University**

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	1	1	2
Computer	6	5	11
Engineering and Technology	4	3	7
Science	34	11	45
TOTAL	45	20	65

YEARS: 2015-16 **TYPE 9: State Open University**

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Agriculture	1	1	2
Computer	6	5	11
Engineering and Technology	2	2	4
Home Science	2	2	4
Science	30	17	47
Total	41	27	68

YEARS: 2011-12 **TYPE 10: Institute of National Importance**

Broad Discipline	**Manpower**		
	M	**F**	**Total**
Computer	2017	552	2569
Engineering and Technology	32415	5724	38139
Medical Science	2335	672	3007
Science	7848	2169	10017
Total	44615	9117	53732

Contd.

YEARS: 2012-13 TYPE 10: Institute of National Importance

Broad Discipline	Manpower		
	M	F	Total
Computer	2029	611	2640
Engineering and Technology	43520	7281	50801
Marine Science	7	0	7
Medical Science	4153	1198	5351
Science	11131	3083	14214
Total	60840	12173	73013

YEARS: 2013-14 TYPE 10: Institute of National Importance

Broad Discipline	Manpower		
	M	F	Total
Computer	2863	791	3654
Engineering and Technology	45164	7638	52802
Home Science	36	17	53
Medical Sciences	4341	1332	5673
Science	18256	5536	23792
Total	70660	15314	85974

YEARS: 2014-15 TYPE 10: Institute of National Importance

Broad Discipline	Manpower		
	M	F	Total
Computer	2725	751	3476
Engineering and Technology	50337	8764	59101
Medical Science	2446	818	3264
Science	21742	6498	28240
Total	77250	16831	94081

YEARS: 2015-16 TYPE 10: Institute of National Importance

Broad Discipline	Manpower		
	M	F	Total
Computer	3883	1072	4955
Engineering and Technology	56305	10662	66967
Medical Science	2641	1000	3641
Science	21451	6311	27762
Total	84280	19045	103325

YEARS: 2011-12 TYPE 11: OTHERS

Broad Discipline	Manpower		
	M	F	Total
Engineering and Technology	443	147	590
Science	5	1	6
Total	448	148	596

YEARS: 2012-13 **TYPE11: OTHERS**

Broad Discipline	Manpower		
	M	F	Total
Engineering and Technology	540	178	718

YEARS: 2013-14 **TYPE11: OTHERS**

Broad Discipline	Manpower		
	M	F	Total
Engineering and Technology	183	84	267

YEARS: 2014-15 **TYPE11: OTHERS**

Broad Discipline	Manpower		
	M	F	Total
Engineering and Technology	1045	391	1436

YEARS: 2015-16 **TYPE11: OTHERS**

Broad Discipline	Manpower		
	M	F	Total
Engineering and Technology	420	191	611
Science	5	1	6
Total	425	192	617
Grand Total	2063202	806663	2869976

Source: DST Project 2016 Qualification of R & D Resources in Higher Education in India, BHU (Derived from the AISHE database (2011-12, 2012-13, 2013-14, 2014-15, 2015-16).

Table 5.3a FTE in R&D Activities in S & T HEO's –Type-wise, Year-wise, Broad Disciplines wise and Gender wise

Years – 2011-12 **Type - 1 Central University**

Broad Discipline	FTE(hours/week)		
	M	F	TOTAL
Agriculture	248.2	55.4	303.6
Computer	861.7	214.05	1075.75
Engineering and Technology	267.9	33	300.9
Fisheries Science	4.65	0.75	5.4
Home Science	29.75	21.15	50.9
Marine Science / Oceanography	31.25	2	33.25
Medical Science	79.45	23.6	103.05
Science	2201.3	735.2	2936.5
Veterinary & Animal Sciences	25.8	4.7	30.5
TOTAL	3750.35	1090	4840.35

Years – 2012-13 **Type - 1 Central University**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Agriculture	416.4	84.45	500.85
Computer	331.85	98.65	430.5
Engineering and Technology	738.55	126.85	865.4
Fisheries Science	4.55	0.65	5.4
Home Science	37.65	35.45	73.1
Marine Science / Oceanography	15.05	0	15.05
Medical Science	237.3	53.7	291
Science	5571	2138.1	7709.1
Veterinary & Animal Sciences	22.9	4.55	27.45
TOTAL	7375.35	2542.5	9917.85

Years – 2013-14 **Type - 1 Central University**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Agriculture	335.1	75.25	410.35
Computer	307.1	99.55	406.65
Engineering & Technology	795.7	154.45	950.15
Fisheries Science	4.65	0.75	5.4
Home Science	42.8	37.70	80.50
Marine Science	36.5	8.25	44.75
Medical Science	386.1	115.05	501.15
Science	6241.55	2483.45	8725
Veterinary & Animal Sciences	26.4	6.1	32.5
TOTAL	8175.9	2980.55	11156.45

Years – 2014-15 **Type - 1 Central University**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Agriculture	388.9	92.95	481.85
Computer	360.9	118.85	479.75
Engineering and Technology	869.15	174.1	1043.25
Fisheries Science	4.65	0.75	5.4
Home Science	32	29.8	61.8
Marine Science / Oceanography	18.3	0.5	18.8
Medical Science	351.7	94.45	446.15
Science	5058.3	1920.8	6981.1
Veterinary & Animal Sciences	21	4.95	25.95
TOTAL	7104.9	2437.15	9542..05

Years – 2015-16 **Type - 1 Central University**

Broad Discipline	FTE(Hours/week)		
	M	**F**	**TOTAL**
Agriculture	495.45	132.45	627.9
Computer	338.45	114.05	452.5
Engineering and Technology	1036.65	256.85	1293.5
Fisheries Science	4.65	0.75	5.4
Home Science	51.2	46.9	98.1
Marine Science / Oceanography	7.5	2.25	9.75
Medical Science	332.1	93.45	425.55
Science	6074.3	2254.1	8328.4
Veterinary & Animal Sciences	20.15	4.55	24.70
TOTAL	8360.45	2905.35	11265.80

Years – 2011-12 **Type - 2 Central Open University**

Broad discipline	**FTE(Hours/week)**		
	M	F	**Total**
Agriculture	4.45	0.25	4.7
Engineering and Technology	9.95	0.95	10.9
Science	80.65	37.6	118.25
computer	2.6	0	2.6
medical science	3.1	1.8	4.9
Total	100.75	40.6	141.35

Years – 2012-13 **Type - 2 Central Open University**

Broad discipline	**FTE(Hours/week)**		
	M	**F**	**Total**
Agriculture	3.4	0.95	4.35
Engineering and Technology	21.55	3.2	24.75
Science	81.4	41.2	122.6
computer	13.9	2	15.9
medical science	2.75	1.8	4.55
Veterinary & Animal Sciences	4	3	7
Total	127	52.15	179.15

Years – 2013-14 **Type - 2 Central Open University**

Broad discipline	FTE(Hours/week)		
	M	F	Total
Agriculture	2.4	0.95	3.35
Engineering and Technology	5.2	1.2	6.4
Science	25.4	11.2	36.6
computer	2.25	0	2.25
medical science	2.75	1.8	4.55
Veterinary & Animal Sciences	0	0	0
Total	38	15.15	53.15

Years – 2014-15 **Type - 2 Central Open University**

Broad discipline	FTE(Hours/week)		
	M	F	Total
Agriculture	2.9	1.45	4.35
Engineering and Technology	4.95	0.95	5.9
Science	15.25	7.25	22.5
computer	2.25	0	2.25
medical science	2.4	1.45	3.85
Veterinary & Animal Sciences	0	0	0
Total	27.75	11.1	38.85

Years – 2015-16 **Type - 2 Central Open University**

Broad discipline	FTE(Hours/week)		
	M	F	Total
Agriculture	**3.4**	**1.45**	4.85
Engineering and Technology	**5.2**	**1.2**	6.4
Science	**14.25**	**7.1**	21.35
computer	**2.25**	**0**	2.25
medical science	**3.6**	**2.05**	5.65
Veterinary & Animal Sciences	**0**	**0**	0
Total	28.7	11.8	40.5

Years– 2011-12 **Type - 3 Deemed University Pvt.**

Broad Discipline	FTE(Hours/week)		
	M	F	Total
Agriculture	12.7	3.35	16.05
Computer	376.95	182.35	559.3
Engineering and Technology	5694.9	2249.8	7944.7
Home Science	43.05	42.7	85.75
Medical science	2193.65	925.8	3119.45
Science	2410.95	1081.45	3492.4
Total	10732.2	4485.45	15217.65

Years – 2012-13 **Type - 3 Deemed University Pvt.**

Broad Discipline	FTE(Hours/week)		
	M	F	Total
Agriculture	5.8	1.35	7.15
Computer	471.9	226.45	698.35
Engineering and Technology	6645.45	2582.2	9227.65
Home Science	132.1	131.15	263.25
Medical science	3126.15	1310.5	4436.65
Science	2861.15	1400	4261.15
Total	13242.55	5651.65	18894.20

Years – 2013-14 **Type - 3 Deemed University Pvt.**

Broad Discipline	FTE(Hours/week)		
	M	F	Total
Agriculture	19.9	5.35	25.25
Computer	624.65	317.15	941.8
Engineering and Technology	6927.95	2583.2	9511.15
Home Science	92.55	90.2	182.75
Medical science	2541.7	1006.75	3548.45
Science	3375	1606.2	4981.2
Total	13581.75	5608.85	19190.6

Years– 2014-15 **Type - 3 Deemed University Pvt.**

Broad Discipline	FTE(Hours/week)		
	M	F	Total
Agriculture	20.15	8.35	28.5
Computer	841	398.4	1239.4

Engineering and Technology	7045.15	2492.45	9537.6
Home Science	116.9	114.6	231.5
Medical science	2216.1	904.8	3120.9
Science	2590.8	1306.5	3897.3
Total	12830.1	5225.65	18055.75

Years – 2015-16 **Type - 3 Deemed University Pvt.**

Broad Discipline	**FTE(Hours/week)**		
	M	**F**	**Total**
Agriculture	25.5	9.75	35.25
Computer	807.85	405.25	1213.1
Engineering and Technology	5164.65	2079.9	7244.55
Home Science	21.35	17.75	39.1
Medical science	2726.8	1124	3850.8
Science	3116.25	1412.25	4528.5
marine science	7	5	12
Total	11869.4	5053.9	16923.3

Years – 2011-12 **Type - 4 Deemed University Govt.**

Broad Discipline	**FTE(Hours/week)**		
	M	**F**	**TOTAL**
Agriculture	601.3	141	742.3
computer	12.9	1.95	14.85
Engineering and Technology	1663.4	300.25	1963.65
Fisheries Science	182.2	63.35	245.55
Marine Science / Oceanography	12.1	2	14.1
Medical Sciences	141.9	55.55	197.45
science	1929.7	605.65	2535.35
Veterinary & Animal Sciences	230.7	53	283.7
TOTAL	4774.2	1222.75	5996.95

Years – 2012-13 **Type - 4 Deemed University Govt.**

Broad Discipline	**FTE(Hours/week)**		
	M	**F**	**TOTAL**
Agriculture	1249.95	379.1	1629.05
Computer	8.4	1.8	10.2

Engineering and Technology	1768.9	376.35	2145.25
Fisheries Science	225.35	80.35	305.7
Medical Sciences	148.8	56.24	205.04
Science	2032.95	549.6	2582.55
Veterinary & Animal Sciences	219.9	41.05	261.85
TOTAL	5655.05	1484.50	7139.55

Years – 2013-14 **Type - 4 Deemed University Govt.**

Broad Discipline	**FTE(Hours/week)**		
	M	**F**	**TOTAL**
Agriculture	611.5	142.75	754.25
Computer	28.45	2.4	30.85
Engineering and Technology	1725.15	373.3	2098.45
Fisheries Science	235.25	82.25	317.5
Marine Science / Oceanography	29.3	8	37.3
Medical Sciences	335.4	138.6	474
science	1943.84	597.05	2579.89
Veterinary & Animal Sciences	299.65	74.45	374.1
TOTAL	5247.15	1418.8	6665.95

Years – 2014-15 **Type - 4 Deemed University Govt.**

Broad Discipline	**FTE(Hours/week)**		
	M	**F**	**TOTAL**
Agriculture	649.4	143.15	792.55
Computer	102.65	19.75	122.4
Engineering and Technology	2853.95	651.55	3505.5
Fisheries Science	314.5	91.35	405.85
Home Science	5.6	1.05	6.65
Medical Sciences	294.1	139.05	433.15
Science	2038.95	664.4	2703.35
Veterinary & Animal Sciences	182.15	701.9	884.05
TOTAL	6778.9	1892.45	8671.35

Years – 2015-16 **Type - 4 Deemed University Govt.**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Agriculture	109.25	34	143.25
Computer	33.2	1.8	35
Engineering and Technology	3489.95	816.8	4306.75
Fisheries Science	347.3	94.95	442.25
Medical Science	354.15	173.55	527.7
Science	2270.25	772.15	3042.4
Veterinary & Animal Sciences	934.9	307.05	1241.95
TOTAL	7539	2200.3	9739.3

Years – 2011-12 **Type - 5 Deemed University Govt.Aided**

Broad Discipline	FTE(Hours/week)		
	M	F	Total
Agriculture	104.35	23.4	127.75
Computer	41.45	22.8	64.25
Engineering and Technology	211.75	41.9	253.65
Home Science	75.25	71.1	146.35
Medical Sciences	127.6	43.65	171.25
Science	523.4	278.65	802.05
Veterinary & Animal Sciences	16.25	3.25	19.5
Total	1100.05	484.75	1584.8

Years – 2012-13 **Type - 5 Deemed University Govt.Aided**

Broad Discipline	FTE(Hours/week)		
	M	F	Total
Agriculture	116.9	23.45	140.35
Computer	50.35	22.75	73.1
Engineering and Technology	256.1	48.95	305.05
Home Science	70.05	69.05	139.1
Medical Sciences	238.75	78.65	317.4
Science	674.4	360.3	1034.7
Veterinary & Animal Sciences	7.05	1.65	8.7
Total	1413.6	604.8	2018.4

Years – 2013-14 **Type - 5 Deemed University Govt.Aided**

Broad Discipline	FTE(Hours/week)		
	M	F	Total
Agriculture	125.15	25.95	151.1
Computer	56.65	23.35	80
Engineering and Technology	266.45	43.25	309.7
Home Science	67.2	63.95	131.15
Medical Sciences	245.9	94.65	340.55
Science	577.05	313.4	890.45
Veterinary & Animal Sciences	8.8	1.65	10.45
Total	1347.2	566.20	1913.4

Years – 2014-15 **Type - 5 Deemed University Govt.Aided**

Broad Discipline	FTE(Hours/week)		
	M	F	Total
Agriculture	168.95	31.3	200.25
Computer	63.35	24.85	88.2
Engineering and Technology	235.5	35.15	270.65
Home Science	77.45	70.25	147.7
Medical Sciences	299.8	136.85	436.65
Science	746.9	422.8	1169.7
Veterinary & Animal Sciences	19.95	2.95	22.9
Total	1611.9	724.15	2336.05

Years – 2015-16 **Type - 5 Deemed University Govt.Aided**

Broad Discipline	FTE(Hours/week)		
	M	F	Total
Agriculture	176.1	41.35	217.45
Computer	91.7	34.1	125.8
Engineering and Technology	53.05	19.6	72.65
Home Science	97.75	87.5	185.25
Medical Sciences	38.15	13.45	51.6
Science	141.9	58.65	200.55
Veterinary & Animal Sciences	30.6	9.25	39.85
Total	629.25	263.9	893.15

Years – 2011-12 **Type - 6 Inst. Under State Legislature Act**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Medical Science	142.9	28.2	171.1
Science	4.05	0.7	4.75
TOTAL	146.95	28.9	175.85

Years – 2012-13 **Type - 6 Inst. Under State Legislature Act**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Medical Science	225.65	45.15	270.8
Science	4.75	2.05	6.8
TOTAL	230.4	47.2	277.6

Years – 2013-14 **Type - 6 Inst. Under State Legislature Act**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Medical Science	390.6	60.6	451.2
Science	14.4	7.75	22.15
TOTAL	405	68.35	473.35

Years – 2014-15 **Type - 6 Inst. Under State Legislature Act**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Medical Science	403.85	58.1	461.95
Science	16.95	6	22.5
TOTAL	420.80	64.10	484.9

Years– 2015-16 **Type - 6 Inst. Under State Legislature Act**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Medical Science	301.95	45.45	347.4
Science	5.45	2.15	7.6
TOTAL	307.4	47.6	355

Years – 2011-12 **Type - 7 State Public University**

Broad discipline	FTE(Hours/week)		
	M	F	TOTAL
Agriculture	2503.57	556.93	3060.5
Computer	1337.01	221.24	1558.25
Engineering and Technology	3005.93	920.9	3926.83
Fisheries Science	592.37	547.35	1139.72
Home Science	1264.42	1179.9	2444.32
Marine Science / Oceanography	1127.56	1226.17	2353.73
Medical Science	729.45	167.33	896.78
Science	5960.336	1434.74	7395.076
Veterinary & Animal Sciences	665.904	213.44	879.344
TOTAL	17186.55	6468	23654.55

Years – 2012-13 **Type - 7 State Public University**

Broad discipline	FTE(Hours/week)		
	M	F	TOTAL
Agriculture	3047.35	803.75	3851.1
Computer	619.25	297.8	917.05
Engineering and Technology	2537.75	644.1	3181.85
Fisheries Science	46.1	10.3	56.4
Home Science	406.55	367.9	773.751
Marine Science / Oceanography	426.75	169.5	596.25
Medical Science	856.65	285.55	1115.2
Science	10717.25	4211	14928.25
Veterinary & Animal Sciences	357.85	78.2	436.05
TOTAL	19015.5	6867.4	25882.9

Years – 2013-14 **Type - 7 State Public University**

Broad discipline	FTE(Hours/week)		
	M	F	TOTAL
Agriculture	3268.4	987.45	4255.85
Computer	611.2	294.6	905.8

Engineering and Technology	3092.55	858.85	3951.4
Fisheries Science	139	21.35	160.35
Home Science	611.85	487.4	1099.25
Marine Science / Oceanography	342.8	113.8	456.6
Medical Science	826.2	266.8	1095
Science	11378.15	4372.15	15750.3
Veterinary & Animal Sciences	542.65	118.25	660.9
TOTAL	20832.80	7520.65	28353.45

Years – 2014-15 **Type - 7 State Public University**

Broad discipline	**FTE(Hours/week)**		
	M	**F**	**TOTAL**
Agriculture	3468.15	1005	4473.15
Computer	1319.55	449.25	1768.8
Engineering and Technology	3412.9	1013.4	4426.3
Fisheries Science	103.1	19.1	122.2
Home Science	606.55	359.1	965.65
Marine Science / Oceanography	720.4	363.05	1083.45
Medical Science	816.35	341.15	1157.5
Science	10791.85	4594.55	15386.4
Veterinary & Animal Sciences	348.25	79.75	428
TOTAL	21587.1	8224.35	29811.45

Years – 2015-16 **Type - 7 State Public University**

Broad discipline	**FTE(Hours/week)**		
	M	**F**	**TOTAL**
Agriculture	2263.35	876.5	3139.85
Computer	921.9	485.8	1407.7
Engineering and Technology	2901.3	920.8	3822.1
Fisheries Science	61.15	22	83.15
Home Science	279.05	250.1	529.15
Marine Science / Oceanography	303.3	142	445.3
Medical Science	566.25	229.4	795.65
Science	11355.1	4828.85	16183.95
Veterinary & Animal Sciences	383.05	113	496.05
TOTAL	19034.45	7868.45	26902.9

Years – 2011-12 **Type - 8 State Private University**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Agriculture	10.1	5	15.1
Computer	208.2	69.85	278.05
Engineering and Technology	1869.75	554.6	2424.35
Home Science	4.45	2.6	7.05
Medical Science	782.35	242.7	1025.05
Science	600.3	265.6	865.9
Veterinary & Animal Sciences	0.5	0	0.5
TOTAL	3475.65	1140.35	4616

Years – 2012-13 **Type - 8 State Private University**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Agriculture	26.05	6.3	32.35
Computer	313.55	120	433.55
Engineering and Technology	3033.4	811.6	3845
Home Science	12.6	10.75	23.35
Medical Science	1171.05	417.3	1588.35
Science	1187.6	558.45	1746.05
Veterinary & Animal Sciences	0.5	0	0.5
TOTAL	5744.75	1924.4	7669.15

Years – 2013-14 **Type - 8 State Private University**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Agriculture	43.85	15.05	58.9
Computer	646.9	230.55	877.45
Engineering and Technology	3240	964.2	4204.2
Home Science	39.4	20.75	60.15
Medical Science	1422	502.025	1924.025
Science	1452.35	685.205	2137.555
Veterinary & Animal Sciences	0.75	0	0.75
TOTAL	6845.25	2417.78	9263.03

Years – 2014-15 **Type - 8 State Private University**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Agriculture	66.05	16.65	82.7
Computer	474.45	187.6	662.05
Engineering and Technology	4336.25	1308	5644.25
Home Science	18.95	11.75	30.7
Medical Science	1732.85	632.95	2365.8
Science	1532.45	695.5	2227.95
Veterinary & Animal Sciences	0.85	0	0.85
TOTAL	8161.85	2852.45	11014.3

Years – 2015-16 **Type - 8 State Private University**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Agriculture	87.45	28.95	116.4
Computer	478.65	177.1	655.75
Engineering and Technology	3572.45	1055.15	4627.6
Home Science	24.6	15	39.6
Medical Science	1662.85	593.15	2256
Science	1649.55	729.3	2378.85
Veterinary & Animal Sciences	1.7	0.25	1.95
TOTAL	7477.60	2598.90	10076.5

Years – 2011-12 **Type - 9 State Private University**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Agriculture	0.25	0	0.25
Engineering and Technology	2.5	1	3.5
Science	1	0.75	1.75
Computer	1.25	0.5	1.75
Home Science	18.50	5.5	24
TOTAL	23.5	7.75	31.25

Years – 2012-13 **Type - 9 State Private University**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Agriculture	0.25	0	0.25
Engineering and Technology	0.75	0.5	1.25
Science	22.25	7.5	29.75
Computer	3.5	0.25	3.75
Home Science	0	0	0
TOTAL	26.75	8.25	35

Years – 2013-14 **Type - 9 State Private University**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Agriculture	0.25	0	0.25
Engineering and Technology	1	0.75	1.75
Science	23.2	6.75	29.95
Computer	6.5	1	7.5
Home Science	0.5	0.5	1
Medical Sciences	0.75	0.25	1
TOTAL	32.2	9.25	41.45

Years – 2014-15 **Type - 9 State Private University**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Agriculture	0.25	0.25	0.5
Engineering and Technology	1	0.75	1.75
Science	20.5	7.25	27.75
Computer	1.5	1.25	2.75
Home Science	0	0	0
Medical Sciences	0	0	0
TOTAL	23.25	9.5	32.75

Years – 2015-16 **Type - 9 State Private University**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Agriculture	0.25	0.25	0.5
Engineering and Technology	0.5	0.5	1
Science	19.5	16.25	35.75
Computer	1.5	1.25	2.75
Home Science	0.5	0.5	1
Medical Sciences	0	0	0
TOTAL	22.25	18.75	41

Years – 2011-12 **Type - 10 Ins. Of National Importance**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Computer	48.9	11.3	60.2
Engineering and Technology	7301.75	1541.8	8843.55
Medical Science	610.45	154.65	765.1
Science	2544	710.9	3254.9
TOTAL	10505.1	2418.65	12923.75

Years – 2012-13 **Type - 10 Ins. Of National Importance**

Broad Discipline	FTE		
	M	F	TOTAL
Computer	36.25	4.85	41.1
Engineering and Technology	9921.75	2129.8	12051.55
Marine Science	1.95	0	1.95
Medical Science	1303.35	382.45	1685.8
Science	3883.9	980.3	4864.2
TOTAL	15147.2	3497.4	18644.6

Years – 2013-14 **Type - 10 Ins. Of National Importance**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Computer	180.1	35.5	215.6
Engineering and Technology	11180.2	2323.4	13503.6
Medical Sciences	1347.15	431.35	1778.5
Science	7419.25	2401.9	9821.15
TOTAL	20126.70	5192.15	25318.85

Years – 2014-15 **Type - 10 Ins. Of National Importance**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Computer	134.25	38	172.25
Engineering and Technology	13705.45	2911.25	16616.7
Medical Sciences	575.25	170.3	745.55
Science	7940.3	2614.45	10554.75
TOTAL	22355.25	5734	28089.25

Years – 2015-16 **Type - 10 Ins. Of National Importance**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Computer	462.25	163.7	625.95
Engineering and Technology	15961.1	3813.45	19774.55
Medical Sciences	703.6	252.8	956.4
Science	9333.5	2835.85	12169.35
TOTAL	26460.45	7065.8	33526.25

Years – 2011-12 **Type - 11 Others**

Broad Discipline	FTE(Hours/week)		
	M	F	
Engineering and Technology	16.45	6.4	22.85

Years – 2012-13 **Type - 11 Others**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Engineering and Technology	23.05	9.5	32.55

Years – 2013-14 **Type - 11 Others**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Engineering and Technology	40.1	15.8	55.9

Years – 2014-15 **Type - 11 Others**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Engineering and Technology	62.3	23.05	85.35

Years – 2015-16 **Type - 11 Others**

Broad Discipline	FTE(Hours/week)		
	M	F	TOTAL
Engineering and Technology	92.90	26.1	119
Science	2.75	0.25	3
Total	95.7	26.30	122

Source: DST project 2016 Qualifications of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12,2012-13,2013-14,2014-15,2015-16).

Note:1. FTE is calculated from number of professors, Associate Professors, Assistant Professors and number of research students (Ph.D. And M.Phil. students) in S&T Disciplines.

2. Values in Bracket show remaining No. of HEO's in various Types of HEO's in various yeas.

Table 5.5a SERD Equivalent Salary Expenditure on R&D Activities in S&T in HEO's –Type-wise, Year-wise, Broad Disciplines wise and Gender wise.

Type-1 Central University (In Crores

Broad discipline	2011(40)			2012(40)		
	SERD			SERD		
	M	F	TOTAL	M	F	TOTAL
Agriculture	10.764	1.627	12.391	21.127	1.957	23.084
Computer	24.578	6.488	31.066	17.845	5.922	23.767
Engineering & Technology	19.486	4.421	23.907	47.678	6.787	54.465
fisheries science	0.501	0.064	0.565	0.501	0.064	0.565
Home science	1.049	0.8004	1.8494	1.871128	1.422	3.293128
Marine Science / Oceanography	2.259	0.011	2.27	1.753	0	1.753
Medical science	4.835	1.185	6.02	31.671	7.048	38.719
Science	132.818	33.7206	166.5386	244.664	47.761	292.425
Veterinary & Animal Sciences	2.139	0.282	2.421	2.7149	0.47	3.1849
Total	**198.429**	**48.599**	247.028	**369.825**	**71.431**	**441.256**

Broad discipline	2013(40)			2014(40)		
	SERD			SERD		
	M	F	TOTAL	M	F	TOTAL
Agriculture	18.074	2.149	20.223	18.56	2.473	21.033
Computer	19.283	5.555	24.838	23.562	6.34	29.902
Engineering & Technology	44.0703	6.542	50.6123	40.731	4.965	45.696
fisheries science	0.501	0.064	0.565	0.501	0.064	0.565
Home science	1.351	1.1208	2.4718	1.437	1.197	2.634
Marine Science / Oceanography	2.182	0.021	2.203	2.411	0.021	2.432
Medical science	35.0101	8.406	43.4161	36.191	9.185	45.376
Science	309.968	91.675	401.643	179.055	43.024	222.079
Veterinary & Animal Sciences	2.497	0.592	3.089	2.572	0.605	3.177
Total	**432.94**	**116.127**	**549.067**	**305.023**	**67.879**	**372.902**

Broad discipline	2015(40)		
	SERD		
	M	F	TOTAL
Agriculture	21.614	3.201	24.815
Computer	22.055	5.942	27.997
Engineering & Technology	40.681	5.851	46.532
fisheries science	0.501	0.064	0.565
Home science	2.135	1.688	3.823
Marine Science / Oceanography	0.428	0.021	0.449
Medical science	28.652	7.19	35.842
Science	216.966	53.904	270.87
Veterinary & Animal Sciences	2.146	0.372	2.518
Total	**335.178**	**78.233**	413.411

Type-2 Central Open University (In Crores)

Broad discipline	2011(1)			2012(1)		
	SERD			SERD		
	M	F	TOTAL	M	F	TOTAL
Agriculture	0.184	0.021	0.205	0.284	0.023	0.307
Engineering and Technology	0.745	0.132	0.877	0.945	0.202	1.147
Science	1.893	0.854	2.747	1.993	0.954	2.947
computer	0.375	0	0.375	0.465	0	0.465
medical science	0.424	0.234	0.658	0.431	0.432	0.863
Total	**3.621**	**1.241**	4.862	**4.118**	**1.611**	**5.729**

Broad discipline	2013(1)			2014(1)		
	SERD			SERD		
	M	F	TOTAL	M	F	TOTAL
Agriculture	0.307	0.132	0.439	0.351	0.175	0.526
Engineering and Technology	0.752	0.154	0.906	0.731	0.134	0.865
Science	1.882	0.889	2.771	2.215	1.008	3.223
computer	0.32	0	0.32	0.319	0	0.319
medical science	0.369	0.233	0.602	0.309	0.175	0.484
Veterinary & Animal Sciences	**0**	**0**	0	**0**	**0**	0
Total	**3.63**	**1.408**	5.038	**3.925**	**1.492**	5.417

Broad discipline	2015(1)		
	SERD		
	M	F	TOTAL
Agriculture	0.394	0.175	0.569
Engineering and Technology	0.753	0.154	0.908
Science	1.996	1.024	3.02
computer	0.319	0	0.319
medical science	0.463	0.252	0.716
Veterinary & Animal Sciences	**0**	**0**	**0**
Total	**3.927**	**1.606**	**5.533**

Type-3 Deemed University-Private (In Crores)

Broad discipline	2011(65)			2012(65)		
	SERD			SERD		
	M	F	TOTAL	M	F	TOTAL
Agriculture	0.585	0.056	0.641	0.447	0.056	0.503
Computer	23.121	10.319	33.44	22.686	10.082	32.768
Engineering and Technology	304.233	105.657	409.89	333.02	108.322	441.342
Home Science	1.505	1.449	2.954	2.689	2.614	5.303
medical science	224.485	83.448	307.933	283.915	107.248	391.163
other science	0.001	0.001	0.002	0	0	0
Science	103.389	42.358	145.747	128.528	52.263	180.791
Total	**657.319**	**243.288**	900.607	**771.285**	**280.585**	**1051.87**

Broad discipline	2013(65)			2014(66)		
	SERD			SERD		
	M	F	TOTAL	M	F	TOTAL
Agriculture	0.659	0.058	0.717	0.678	0.058	0.736
Computer	29.126	13.243	42.369	32.567	14.001	46.568
Engineering and Technology	349.862	114.731	464.593	316.855	99.699	416.554
Home Science	2.165	1.933	4.098	4.279	4.001	8.28
medical science	238.2	87.101	325.301	197.087	68.124	265.211
Science	143.755	58.835	202.59	96.379	41.344	137.723
Total	**763.767**	**275.901**	**1039.668**	**647.845**	**227.227**	**875.072**

Broad discipline	2015(67)		
	SERD		
	M	F	TOTAL
Agriculture	1.181	0.159	1.34
Computer	121.253	68.467	189.72
Engineering and Technology	918.141	370.915	1289.056
Home Science	2.622	2.159	4.781
Marine Science	0.0001	8.97	8.9701
Medical Sciences	249.123	91.258	340.381
Science	394.147	157.62	551.767
Total	**1686.467**	**699.548**	**2386.015**

Type-4 Deemed University-Government (In Crores)

Broad discipline	2011(25)			2012(25)		
	SERD			SERD		
	M	F	TOTAL	M	F	TOTAL
Agriculture	36.172	8.647	44.819	98.026	26.758	124.784
Computer	1.856	0.218	2.074	1.206	0.231	1.437
Engineering and Technology	268.245	61.435	329.68	82.272	15.418	97.69
Fisheries Science	6.23	2.023	8.253	7.158	2.428	9.586
Marine Science / Oceanography	2.086	0.357	2.443	0	0	0

Medical Sciences	11.155	3.669	14.824	15.594	6.008	21.602
Science	233.299	78.413	311.712	122.597	26.108	148.705
Veterinary & Animal Sciences	1721.596	343.756	2065.352	21.999	2.699	24.698
Total	**2280.639**	**498.518**	**2779.157**	**348.852**	**79.65**	**428.502**

Broad discipline	**2013(25)**			**2014(25)**		
	SERD			**SERD**		
	M	**F**	**TOTAL**	**M**	**F**	**TOTAL**
Agriculture	48.901	11.176	60.077	48.044	9.829	57.873
Computer	3.524	0.307	3.831	21.973	3.809	25.782
Engineering and Technology	399.811	88.551	488.362	435.631	93.729	529.36
Fisheries Science	8.106	2.503	10.609	9.867	2.762	12.629
Marine Science / Oceanography	8.926	2.595	11.521	0.895	0.168	1.063
Medical Sciences	27.894	11.008	38.902	26.897	12.392	39.289
Science	332.397	110.395	442.792	434.525	152.719	587.244
Veterinary & Animal Sciences	26.048	4.488	30.536	26.736	6.934	33.67
Total	**855.607**	**231.023**	**1086.63**	**1004.568**	**282.342**	**1286.91**

Broad discipline	**2015(24)**		
	SERD		
	M	**F**	**TOTAL**
Agriculture	11.043	2.622	13.665
Computer	2.911	0.232	3.143
Engineering and Technology	877.656	199.575	1077.231
Fisheries Science	12.151	3.24	15.391
Marine Science / Oceanography	0	0	0
Medical Sciences	63.883	32.106	95.989
Science	659.708	256.168	915.876
Veterinary & Animal Sciences	15.508	2.379	17.887
Total	**1642.86**	**496.322**	**2139.182**

Type-5 Deemed University-Government Aided (In Crores)

Broad discipline	2011(10)			2012(10)		
	SERD			SERD		
	M	F	TOTAL	M	F	TOTAL
Agriculture	4.905	0.912	5.817	4.524	0.724	5.248
Computer	1.773	0.967	2.74	1.968	1.018	2.986
Engineering and Technology	13.074	2.784	15.858	16.764	4.197	20.961
Home Science	2.996	2.597	5.593	3.538	3.52	7.058
Medical Sciences	5.33	2.408	7.738	11.418	4.823	16.241
Science	18.147	8.187	26.334	16.78	7.733	24.513
Veterinary & Animal Sciences	0.687	0.099	0.786	1.067	0.243	1.31
Total	**46.912**	**17.954**	**64.866**	**56.059**	**22.258**	**78.317**

Broad discipline	2013(10)			2014(11)		
	SERD			SERD		
	M	F	TOTAL	M	F	TOTAL
Agriculture	4.696	0.755	5.451	5.395	0.868	6.263
Computer	1.847	0.947	2.794	2.239	1.122	3.361
Engineering and Technology	15.287	3.444	18.731	9.266	2.326	11.592
Home Science	3.375	3.282	6.657	2.867	2.522	5.389
Medical Sciences	9.97	3.871	13.841	11.342	5.294	16.636
Science	17.745	8.243	25.988	17.17	8.033	25.203
Veterinary & Animal Sciences	1.087	0.245	1.332	1.039	0.177	1.216
Total	**54.007**	**20.787**	**74.794**	**49.318**	**20.342**	**69.66**

Broad discipline	2015(11)		
	SERD		
	M	F	TOTAL
Agriculture	1.976	0.363	2.339
Computer	2.64	1.289	3.929

Engineering and Technology	6.071	1.84	7.911
Home Science	2.062	1.895	3.957
Medical Sciences	2.436	1.205	3.641
Science	12.548	5.486	18.034
Veterinary & Animal Sciences	0.667	0.088	0.755
Total	**28.4**	**12.166**	**40.566**

Type-6 Institute Under State Legislature Act (In Crores)

Broad discipline	**2011(3)**			**2012(4)**		
	SERD			**SERD**		
	M	**F**	**TOTAL**	**M**	**F**	**TOTAL**
Medical Science	17.631	2.785	20.416	21.611	4.316	25.927
Science	0.479	0.111	0.59	0.566	0.167	0.733
Total	**18.11**	**2.896**	**21.006**	**22.177**	**4.483**	**26.66**

Broad discipline	**2013(4)**			**2014(4)**		
	SERD			**SERD**		
	M	**F**	**TOTAL**	**M**	**F**	**TOTAL**
Medical Science	21.603	4.121	25.724	27.472	3.979	31.451
Science	0.913	0.383	1.296	0.568	0.046	0.614
Total	**22.516**	**4.504**	**27.02**	**28.04**	**4.025**	**32.065**

Broad discipline	**2015(4)**		
	SERD		
	M	**F**	**TOTAL**
Medical Science	1.74	0.32	2.06
Science	0.048	0.011	0.059
Total	**1.788**	**0.331**	**2.119**

Type-7 State Public University (In Crores)

Broad discipline	2011 (209)			2012 (208)		
	SERD			SERD		
	M	F	TOTAL	M	F	TOTAL
Agriculture	25.58	5.924	31.504	34.733	39.408	74.141
Computer	337.45	94.41	431.86	30.104	28.974	59.078
Engineering & Technology	467.206	129.208	596.414	71.348	150.063	221.411
Fisheries Science	3.536	0.672	4.208	4.675	0.577	5.252
Forensic Science	0	0	0	0.396	0.043	0.439
Home Science	16.122	4.3	20.422	32.497	28.921	61.418
Marine science	77.364	20.834	98.198	35.012	8.94	43.952
Medical science	776.964	299.909	1076.873	91.1	24.845	115.945
Science	501.262	157.709	658.971	1200.521	388.086	1588.607
Veterinary & Animal Sciences	3.748	0.635	4.383	40.462	6.259	46.721
Total	**2209.232**	**713.601**	**2922.833**	**1540.848**	**676.116**	**2216.964**

Broad discipline	2013 (215)			2014 (219)		
	SERD			SERD		
	M	F	TOTAL	M	F	TOTAL
Agriculture	206.066	46.352	252.418	240.367	110.525	350.892
Computer	107.506	96.949	204.455	38.208	9.809	48.017
Engineering & Technology	196.093	47.897	243.99	251.094	64.231	315.325
fisheries science	123.012	1.597	124.609	5.317	0.463	5.78
Home Science	56.033	47.154	103.187	35.942	23.64	59.582
marine science	5.121	3.407	8.528	35.995	14.746	50.741
Medical Science	73.289	27.179	100.468	72.148	29.174	101.322
Science	650.258	274.115	924.373	528.136	110.411	638.547
Veterinary & Animal	46.258	6.544	52.802	32.617	5.172	37.789

Sciences						
Total	1463.636	551.194	2014.83	1239.824	368.171	1607.995

Broad discipline	**2015 (219)**		
	SERD		
	M	**F**	**TOTAL**
Agriculture	93.815	23.022	116.837
Computer	30.64	12.203	42.843
Engineering & Technology	313.4	70.909	384.309
Fisheries Science	1.224	0.065	1.289
Home Science	11.655	9.287	20.942
Marine Science	72.035	31.05	103.085
Medical Science	85.874	31.53	117.404
Science	821.838	277.732	1099.57
Veterinary & Animal Sciences	21.419	4.674	26.093
Total	**1451.9**	**460.472**	**1912.372**

Type-8 State Private University (In Crores)

Broad discipline	**2011 (69)**			**2012 (98)**		
	SERD			**SERD**		
	M	**F**	**TOTAL**	**M**	**F**	**TOTAL**
Agriculture	1.15	0.556	1.706	2.875	0.617	3.492
Computer	11.854	4.097	15.951	30.409	13.023	43.432
Engineering and Technology	126.532	34.869	161.401	218.664	55.813	274.477
Home Science	0.434	0.249	0.683	0.611	0.429	1.04
Medical Science	69.835	22.377	92.212	143.525	48.37	191.895
Science	29.607	12.109	41.716	86.862	36.009	122.871
Veterinary & Animal	0.046	0	0.046	0.046	0	0.046

Sciences						
Total	**239.458**	**74.257**	**313.715**	**482.992**	**154.261**	**637.253**

Broad discipline	**2013(106)**			**2014(138)**		
	SERD			**SERD**		
	M	**F**	**TOTAL**	**M**	**F**	**TOTAL**
Agriculture	4.481	1.497	5.978	6.309	1.49	7.799
Computer	29.174	10.429	39.603	29.494	60.702	90.196
Engineering and Technology	236.203	64.419	300.622	295.239	49.648	344.887
Home Science	3.121	1.242	4.363	1.005	0.626	1.631
Medical Science	122.969	41.224	164.193	165.556	38.472	204.028
Science	59.28	24	83.28	63.757	23.266	87.023
Veterinary & Animal Sciences	0.066	0	0.066	0.099	0	0.099
Total	**455.294**	**142.811**	**598.105**	**561.459**	**174.204**	**735.663**

Broad discipline	**2015(143)**		
	SERD		
	M	**F**	**TOTAL**
Agriculture	8.258	2.455	10.713
Computer	29.198	10.268	39.466
Engineering and Technology	288.101	77.159	365.26
Home Science	1.633	0.529	2.162
Medical Science	160.405	51.235	211.64
Science	80.477	29.136	109.613
Veterinary & Animal Sciences	0.199	0.023	0.222
Total	**568.271**	**170.805**	**739.076**

Type-9 State Open University (In Crores)

Broad discipline	2011(2)			2012(2)		
	SERD			SERD		
	M	F	TOTAL	M	F	TOTAL
Agriculture	0.021	0	0.021	0.021	0	0.021
Computer	0.129	0.086	0.215	0.043	0	0.043
Engineering and Technology	0.086	0.064	0.15	0.064	0	0.064
Home Science	0.107	0.043	0.15	0	0.001	0.001
Science	0.316	0.048	0.364	0.407	0	0.407
Total	**0.659**	**0.241**	**0.9**	0.535	0.001	0.536

Broad discipline	2013(2)			2014(2)		
	SERD			SERD		
	M	F	TOTAL	M	F	TOTAL
Agriculture	0.021	0	0.021	0.021	0	0.021
Computer	0.129	0	0.129	0.129	0	0.129
Engineering and Technology	0.086	0	0.086	0.086	0	0.086
Home Science	0.043	0	0.043	0	0	0
Medical Sciences	0.064	0	0.064	0	0	0
Science	0.557	0.002	0.559	0.805	0.003	0.808
Total	**0.9**	**0.002**	**0.902**	**1.041**	**0.003**	**1.044**

Broad discipline	2015(2)		
	SERD		
	M	F	TOTAL
Agriculture	0.021	0	0.021
Computer	0.129	0	0.129
Engineering and Technology	0.043	0	0.043
Science	0.927	0.006	0.933
Home Science	0.044	0	0.044
Total	**1.164**	**0.006**	**1.17**

Type- 10 Institute of National Importance (In Crores)

Broad discipline	2011(48)			2012(50)		
	SERD			SERD		
	M	F	TOTAL	M	F	TOTAL
Computer	6.361	1.301	7.662	2.357	0.211	2.568
Engineering and Technology	876.854	174.223	1051.077	6084.71	293.834	6378.544
Marine Science	0	0	0	0.218	0	0.218
Medical Science	37.502	9.977	47.479	62.15	17.346	79.496
Science	258.013	61.355	319.368	419.407	101.062	520.469
Total	**1178.73**	**246.856**	**1425.586**	**6568.842**	**412.453**	**6981.295**

Broad discipline	2013(50)			2014(50)		
	SERD			SERD		
	M	F	TOTAL	M	F	TOTAL
Computer	36.841	9.09	45.931	43.261	12.24	55.501
Engineering and Technology	1865.62	408.324	2273.944	2570.334	572.437	3142.771
Home Science	0	0	0	0	0	0
Medical Sciences	79.862	20.522	100.384	45.225	25.585	70.81
Science	927.763	283.278	1209.17	1253.558	391.864	1645.422
Total	**2910.086**	**721.214**	**3631.3**	3912.378	1002.126	4914.504

Broad discipline	2015(62)		
	SERD		
	M	F	TOTAL
Computer	57.359	17.434	74.793
Engineering and Technology	2903.667	736.379	3640.046
Medical Science	47.138	15.829	62.967
Science	1165.568	282.723	1448.291
Total	**4173.732**	**1052.365**	**5226.097**

Type-11 Others (In Crores)

Broad discipline	2011(2)			2012(2)		
	SERD			SERD		
	M	F	TOTAL	M	F	TOTAL
Engineering and Technology	**1.419**	**0.395**	**1.814**	**1.798**	**0.518**	**2.316**

Broad discipline	2013(2)			2014(3)		
	SERD			SERD		
	M	F	TOTAL	M	F	TOTAL
Engineering and Technology	**1.922**	**0.511**	**2.433**	**2.721**	**0.599**	**3.32**

Broad discipline	2015(4)		
	SERD		
	M	F	TOTAL
science	0.065	0.021	0.086
Engineering and Technology	2.497	0.684	3.181
Total	**2.562**	**0.76**	**3.322**

Source: DST Project 2016 Quantification of R&D Resources education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15) and UGC Annual Reports 2011-12, 2012-13, 2012-14, 2014-15.

Note: Includes S&T Teachers only, excluding Students

Some Informations for Table 5.6a

Table 5.6a is on Students Enrolment in Various Disciplines - Type and Year wise, for all the five study years 2011 to 2015.

Notes:

1. *Last column contains percentage of total enrolment of students in all types in a year in various disciplines (92 in number).and last but one column contains total enrolment* of *student in the discipline in the row.*
2. *Enrolment is zero in some types where the discipline was taught but students did not enrol.*
3. *In some years in some types some disciplines have no students enrolled though in other years such disciplines may have students enrolled. This is also a reason for values '0' in some types and years.*

For Example:

Type 2(Central Open University), Type 5(Deemed Univ. Govt. Aided), Type 6(Inst. Under State Legislature Act), Type 9(State Open University), and Type 11(Others), have very small number of disciplines run. So many of 92 disciplines have enrolment zero.

Type 2(central open university in the only one HEO, IGNOU) in 2011-12 only seven disciplines were having students enrolled. Whereas in other years many disciplines up to twelve were having students, in 2014-15 only 'Economics' students are enrolled.

In Type 11 in 2011-12 to 12-13 only 2 disciplines Planning, Architecture enrolled. In 2013-14 one discipline was run with enrolled students.

*[Calculate Percentage P] = (Number of students enrolled in discipline in the year/Total S&T students enrolled (SST) in the year)*100*

Table 5.6a Students Enrolment in Various Disciplines-Type and Year wise

Year 2011-12

Types→ Disciplines↓	Central University	Central Open University	Deemed University Pvt.	Deemed University Govt.	Deemed Univ. Govt. Aided	Inst. Under State Legislature Act	State Public University	State Private University	State Open University	Inst. Of National Importance	Others	Total	Percentage(P)
1.Agriculture	1356	3	119	975	408	0	9811	35	0	0	0	**12707**	**3.298**
2.Forestry	95	0	0	0	44	0	416	0	0	0	0	**555**	**0.144**
3.Horticulture	206	0	0	0	0	0	663	0	0	0	0	**869**	**0.226**
4.Sericulture	0	0	0	0	0	0	0	0	0	0	0	**0**	**0.000**
5.Aeronautical Engineering	0	0	8	144	0	0	0	0	0	0	0	**152**	**0.039**
6.Agriculture Engineering	83	0	1	17	307	0	63	755	0	7	0	**1233**	**0.320**
7.Architecture	0	0	62	464	16	0	0	116	0	648	392	**1698**	**0.441**
8.Chemical Engineering	109	0	106	441	0	0	175	53	0	2064	0	**2948**	**0.765**
9.Civil Engineering	699	0	1067	399	72	0	694	145	0	4482	0	**7558**	**1.961**
10.Computer Engineering	846	0	6747	987	469	0	1942	3301	0	2826	0	**17118**	**4.442**
11.Dairy Technology	0	0	0	60	0	0	0		0	0	0	**60**	**0.016**
12.Electrical Engineering	193	0	2028	639	163	0	1141	291	0	3968	0	**8423**	**2.186**
13.Electronics Engineering	375	0	4575	396	263	0	1475	1971	0	2122	0	**11177**	**2.900**
14.Food Technology	149	0	0	0	82	0	0	0	0	49	0	**280**	**0.073**
15.Information Technology	88	0	3543	1383	0	0	2063	1245	0	152	0	**8474**	**2.199**
16.Marine Engineering	0	0	0	13	0	0	0	0	0	0	0	**13**	**0.003**
17.Mechanical Engineering	203	5	2174	508	0	0	786	591	0	4017	0	**8284**	**2.150**
18.Metallurgical Engineering	54	0	0	234	0	0	73		0	1137	0	**1498**	**0.389**
19.Mining Engineering	77	0	0	100	0	0	0	0	0	16	0	**193**	**0.050**
20.Other Engineering & Technology	1596	0	14227	984	0	0	3781	3561	0	9984	0	**34133**	**8.858**
21.Transportation Planning	0	0	0	0	0	0	0	0	0	0	0	**0**	**0.000**
22.Planning	0	0	0	562	0	0	0	0	0	0	153	**715**	**0.186**
23.Urban Planning	0	0	0	0	0	0	40	0	0	0	0	**40**	**0.010**
24.Fisheries Science	0	0	0	416	0	0	40	0	0	0	0	**456**	**0.118**
25.Food Technology	0	0	0	0	0	0	530	49	0	0	0	**579**	**0.150**

Types→ Disciplines↓	Central University	Central Open University	Deemed University Pvt.	Deemed University Govt.	Deemed Univ. Govt. Aided	Inst. Under State Legislature Act	State Public University	State Private University	State Open University	Inst. Of National Importance	Others	Total	Percentage(P)
26.Home Science	195	0	810	0	0	0	2497	68	0	0	0	**3570**	**0.926**
27.Nutrition	233	0	90	0	0	0	181	10	0	0	0	**514**	**0.133**
28.Computer Application	2291	0	11421	0	1225	0	19304	1701	0	2346	0	**38288**	**9.936**
29.Computer Science	980	0	2024	72	388	0	11278	7500	1	0	0	**22243**	**5.772**
30.Marine Science	131	0	0	13	0	0	452	0	0	0	0	**596**	**0.155**
31.Anatomy	8	0	296	0	0	0	31	8	0	64	0	**407**	**0.106**
32.Anesthesiology	19	0	136	0	0	84	47	5	0	90	0	**381**	**0.099**
33.Ayurveda	136	0	76	0	35	0	686	0	0	0	0	**933**	**0.242**
34.Biophysics	0	0	0	0	0	0	0	0	0	0	0	**0**	**0.000**
35.Biostatistics	0	0	0	0	0	0	0	0	0	1	0	**1**	**0.000**
36.Bio Technology	0	0	0	0	0	0	8025	0	0	26	0	**8051**	**2.089**
37.Cardiology	0	0	33	0	0	10	0	0	0	49	0	**92**	**0.024**
38.Dentistry	48	0	1814	0	0	0	562	243	0	40	0	**2707**	**0.702**
39.Dermatology	0	0	40	0	0	0	13	3	0	38	0	**94**	**0.024**
40.Endocrinology	0	0	3	0	0	9	0	0	0	3	0	**15**	**0.004**
41.ENT	0	0	84	0	0	0	0	16	0	32	0	**132**	**0.034**
42.Forensic Medicine/ Toxicology	3	0	20	0	0	0	133	2	0	24	0	**182**	**0.047**
43.Gastroentrology	0	0	13	0	0	8	0	0	0	18	0	**39**	**0.010**
44. General Medicine	33	0	769	12	0	78	980	117	0	108	0	**2097**	**0.544**
45.General Surgery	88	0	201	0	0	60	244	48	0	89	0	**730**	**0.189**
46.Gynaecology	0	0	227	0	0	16	79	4	0	112	0	**438**	**0.114**
47.Haematology	0	0	0	0	0	0	4	0	0	11	0	**15**	**0.004**
48.Hepatology	0	0	0	0	0	0	0	0	0	0	0	**0**	**0.000**
49.Homeopathy	0	0	2	0	0	0	0	51	0	0	0	**53**	**0.014**
50.Microbiology	0	0	884	0	0	33	4658	0	0	104	0	**5679**	**1.474**
51.Nephrology	0	0	6	0	0	0	0	0	0	6	0	**12**	**0.003**
52.Neurology	0	0	22	23	0	8	0	0	0	74	0	**127**	**0.033**
53.Nursing	0	0	816	47	0	103	0	129	0	71	0	**1166**	**0.303**
54.Oncology	0	0	1	79	0	1	0	0	0	6	0	**87**	**0.023**
55.Ophthalmology	0	0	15	0	0	0	12	1	0	170	0	**198**	**0.051**
56.Orthopaedics	0	0	129	0	0	0	19	3	0	27	0	**178**	**0.046**
57.Pathology	25	0	149	0	0	34	40	6	0	65	0	**319**	**0.083**
58.Paediatrics	15	0	119	0	0	21	53	2	0	87	0	**297**	**0.077**
59..Pharmacy	340	0	2163	46	0	0	4278	2115	0	407	0	**9349**	**2.426**
60.Physiology	15	0	225	0	0	87	9	4	0	71	0	**411**	**0.107**

Types→ Disciplines↓	Central University	Central Open University	Deemed University Pvt.	Deemed University Govt.	Deemed Univ. Govt. Aided	Inst. Under State Legislature Act	State Public University	State Private University	State Open University	Inst. Of National Importance	Others	Total	Percentage(P)
61.Plastic Surgery	4	0	0	0	0	0	0	0	0	0	0	**4**	**0.001**
62.Psychiatry	5	0	7	0	0	5	9	0	0	45	0	**71**	**0.018**
63.Public Health	0	0	192	0	0	0	116	0	0	44	0	**352**	**0.091**
64.Radiology	27	0	53	0	0	4	4	0	0	52	0	**140**	**0.036**
65.Radiothrapy	3	0	7	0	0	24	2	0	0	21	0	**57**	**0.015**
66.Urology	0	0	11	0	0	8	0	0	0	20	0	**39**	**0.010**
67.Bio-Chemistry	771	0	435	112	169	9	4470	169	0	0	0	**6135**	**1.592**
68.Bio-Science	696	0	1214	661	205	0	2744	848	0	396	0	**6764**	**1.755**
69.Bio Technology	1021	0	2996	0	556	36	0	2286	0	0	0	**6895**	**1.789**
70.Botany	1403	0	140	0	348	0	8153	147	0	0	0	**10191**	**2.645**
71.Chemistry	3253	17	2271	764	564	0	18921	1075	0	1987	0	**28852**	**7.487**
72.Electronics	219	0	0	0	0	0	3600	0	0	0	0	**3819**	**0.991**
73.Environmental Science	1617	0	529	167	133	0	3340	69	0	0	0	**5855**	**1.519**
74.Genetics	120	0	0	91	0	0	853	1	0	0	0	**1065**	**0.276**
75.Geology	631	0	0	130	0	0	3259	63	0	74	0	**4157**	**1.079**
76.Geo-Physics	0	0	0	175	2	0	353	1	0	0	0	**531**	**0.138**
77.Life Sciences	2811	28	265	366	0	30	3334	4	0	23	0	**6861**	**1.780**
78.Mathematics	4760	4	1858	328	0	0	16495	145	0	1156	0	**24746**	**6.422**
79.Microbiology	527	0	0	0	0	0	0	85	0	0	0	**612**	**0.159**
80.Physics	2931	0	1779	499	0	0	13070	406	0	1694	0	**20379**	**5.288**
81.Science	0	0	0	0	0	0	572	0	0	255	0	**827**	**0.215**
82.Statistics	735	0	67	0	0	0	4804	0	0	116	0	**5722**	**1.485**
83.Zoology	1222	0	80	0	0	0	8001	126	0	0	0	**9429**	**2.447**
84.Anthropology	255	0	0	0	105	0	417	0	0	0	0	**777**	**0.202**
85.Economics	884	34	325	0	695	0	2246	85	20	41	0	**4330**	**1.124**
86.Geography	313	0	164	0	124	0	901	0	0	0	0	**1502**	**0.390**
87.Population Studies	0	0	0	47	0	0	3	0	0	0	0	**50**	**0.013**
88.Dairy Science	0	0	0	69	26	0	0	0	0	0	0	**95**	**0.025**
89.Veterinary & Animal Science	25	0	0	436	0	0	1570	0	0	0	0	**2031**	**0.527**
90.New Engineering & Technology	0	0	0	0	0	0	0	14	0	224	0	**238**	**0.062**
91.Other Medical Science	0	0	1635	287	0	109	18	545	0	189	0	**2783**	**0.722**
92.Other Science	0	17	5787	1050	0	80	4	713	0	3825	0	**11476**	**2.978**
Total	**34922**	**108**	**77060**	**14196**	**6399**	**857**	**174537**	**30931**	**21**	**45773**	**545**	**385349**	

Source: *DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16).*

Year 2012-13

Types→ Disciplines↓	Central University	Central Open University	Deemed University Pvt.	Deemed University Govt.	Deemed Univ. Govt. Aided	Inst.Under State Legislature Act	State Public University	State Private University	State Open University	Inst. Of National Importance	Others	Total	Percentage(P)
1.Agriculture	1418	1	126	1972	358	0	10647	91	0	0	0	**14613**	**3.419**
2.Forestry	61	0	0	0	72	0	357	0	0	0	0	**490**	**0.115**
3.Horticulture	277	0	0	0	262	0	775	32	0	0	0	**1346**	**0.315**
4.Sericulture	0	0	0	0	18	0	0	0	0	0	0	**18**	**0.004**
5.Aeronautical Engineering	0	0	17	138	0	0	0	1	0	0	0	**156**	**0.036**
6.Agriculture Engineering	0	0	1	27	322	0	13	23	0	585	0	**971**	**0.227**
7.Architecture	0	0	76	250	18	0	16	137	0	688	119	**1304**	**0.305**
8.Chemical Engineering	0	0	103	749	7	0	213	44	0	2728	0	**3844**	**0.899**
9. Engineering	287	2	129	426	119	0	405	1112	0	5914	0	**8394**	**1.964**
10.Computer Engineering	54	0	103	1088	470	0	23648	11358	0	3342	0	**40063**	**9.373**
11.Dairy Technology	0	0	0	0	0	0	8	0	0	0	0	**8**	**0.002**
12.Electrical Engineering	5	0	2362	623	220	0	443	764	0	5254	0	**9671**	**2.263**
13.Electronics Engineering	48	0	6013	462	290	0	3555	4638	4	2970	0	**17980**	**4.206**
14.Food Technology	154	0	17	0	19	0	578	181	0	0	0	**949**	**0.222**
15.Information Technology	314	0	4630	1702	51	0	2583	1917	0	253	0	**11450**	**2.679**
16.Marine Engineering	0	0	0	57	0	0	13	0	0	0	0	**70**	**0.016**
17.Mechanical Engineering	14	16	1804	565	167	0	415	383	0	5710	0	**9074**	**2.123**
18.Metallurgical Engineering	0	0	0	240	0	0	22	16	0	1396	0	**1674**	**0.392**
19.Mining Engineering	0	0	0	131	0	0	19	2	0	258	0	**410**	**0.096**
20.Other Engineering & Technology	0	0	0	0	0	0	35	0	0	0	0	**35**	**0.008**
21.Transportation Planning	0	0	0	0	0	0	0	0	0	0	0	**0**	**0.000**
22.Planning	0	0	0	291	0	0	0	3	0	0	43	**337**	**0.079**
23.Urban Planning	0	0	0	0	0	0	0	0	0	0	0	**0**	**0.000**

Types→ Disciplines↓	Central University	Central Open University	Deemed University Pvt.	Deemed University Govt.	Deemed Univ. Govt. Aided	Inst. Under State Legislature Act	State Public University	State Private University	State Open University	Inst. Of National Importance	Others	Total	Percentage(P)
24.Fisheries Science	0	0	0	485	0	0	298	0	0	0	0	**783**	**0.183**
25.Food Technology	0	0	0	0	0	0	0	0	0	0	0	**0**	**0.000**
26.Home Science	228	0	730	0	372	0	2915	39	0	0	0	**4284**	**1.002**
27.Nutrition	213	0	79	0	214	0	300	112	0	0	0	**918**	**0.215**
28.Computer Application	2875	0	45		1117	0	1599	6162	0	2560	0	**14358**	**3.359**
29.Computer Science	1068	14	2362	24	394	0	9129	2334	3	14	0	**15342**	**3.589**
30.Marine Science	47	0	4	0	0	0	1205	0	0	0	0	**1256**	**0.294**
31.Anatomy	8	0	277	0	0	0	47	7	0	75	0	**414**	**0.097**
32.Anesthesiology	23	0	174	5	0	76	20	24	0	222	0	**544**	**0.127**
33.Ayurveda	0	0	1	0	18	0	483	33	0	0	0	**535**	**0.125**
34.Biophysics	0	0	0	0	0	0	0	0	0	3	0	**3**	**0.001**
35.Biostatistics	0	0	0	0	0	0	0	0	0	1	0	**1**	**0.000**
36.Bio Technology	1154	0	2269	0	494	14	8445	2627	0	77	0	**15080**	**3.528**
37.Cardiology	0	0	45	0	0	11	0	0	0	104	0	**160**	**0.037**
38.Dentistry	52	0	129	0	0	0	656	547	0	54	0	**1438**	**0.336**
39.Dermatology	6	0	45	0	0	0		9	0	86	0	**146**	**0.034**
40.Endocrinology	0	0	6	0	0	12	0	0	0	25	0	**43**	**0.010**
41.ENT	0	0	113	0	0	0	0	53	0	54	0	**220**	**0.051**
42.Forensic Medicine/ Toxicology	44	0	27	0	0	0	2	9	0	22	0	**104**	**0.024**
43.Gastroentrology	0	0	12	3	0	13	0	0	0	56	0	**84**	**0.020**
44.General Medicine	88	0	630	0	0	77	989	182	0	224	0	**2190**	**0.512**
45.General Surgery	166	0	272	0	0	59	142	74	0	190	0	**903**	**0.211**
46.Gynaecology	34	0	275	0	0	10	85	31	0	182	0	**617**	**0.144**
47.Haematology	0	0	0	4	0	1	2	0	0	28	0	**35**	**0.008**
48.Hepatology	0	0	0	0	0	0	0	0	0	0	0	**0**	**0.000**

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49.Homeopathy	0	0	2	0	0	0	0	85	0	0	0	**87**	**0.020**
50.Microbiology	598	0	558	0	444	24	4637	1105	0	112	0	**7478**	**1.749**
51.Nephrology	0	0	9	0	0	6	0	0	0	31	0	**46**	**0.011**
52.Neurology	0	0	26	25	0	13	0	0	0	169	0	**233**	**0.055**
53.Nursing	0	0	1064	48	22	42	0	204	0	171	0	**1551**	**0.363**
54.Oncology	0	0	2	55	0	3	0	0	0	23	0	**83**	**0.019**
55.Ophthalmology	0	0	35	0	0	9	0	6	0	234	0	**284**	**0.066**
56.Orthopaedics	12	0	174	0	0	0	29	9	0	59	0	**283**	**0.066**
57.Pathology	30	0	190	0	0	64	40	74	0	108	0	**506**	**0.118**
58.Paediatrics	15	0	146	1	0	12	51	23	0	278	0	**526**	**0.123**
59.Pharmacy	388	0	1704	46	485	0	4948	2403	0	437	0	**10411**	**2.436**
60.Physiology	17	0	405	0	0	0	9	0	0	76	0	**507**	**0.119**
61.Plastic Surgery	0	0	0	0	0	2	0	0	0	0	0	**2**	**0.000**
62.Psychiatry	5	0	12	0	70	0	8	655	0	82	0	**832**	**0.195**
63.Public Health	0	0	284	0	246	0	0	284	0	49	0	**863**	**0.202**
64.Radiology	27	0	77	4	0	21	4	15	0	89	0	**237**	**0.055**
65.Radiotherapy	3	0	10	0	0	20	2	0	0	33	0	**68**	**0.016**
66.Urology	0	0	7	0	0	7	0	0	0	32	0	**46**	**0.011**
67.Bio-Chemistry	792	0	359	104	258	10	3726	282	0	126	0	**5657**	**1.323**
68.Bio-Science	818	0	1208	473	188	0	2857	751	0	353	0	**6648**	**1.555**
69.Bio technology	0	0	0	0	0	0	0	0	0	0	0	**0**	**0.000**
70.Botany	1688	0	129	0	348	0	8871	274	0	0	0	**11310**	**2.646**
71.Chemistry	3651	16	2362	930	630	0	20734	1991	0	2978	0	**33292**	**7.789**
72.Electronics	208	0	0	0	0	0	0	0	0	0	0	**208**	**0.049**
73.Environmental Science	1727	0	513	168	159	0	3728	84	0	34	0	**6413**	**1.500**

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74.Genetics	109	0	0	74	0	0	991	1	0	0	0	**1175**	**0.275**
75.Geology	799	4	0	88	0	0	3878	14	0	18	0	**4801**	**1.123**
76.Geo-Physics	0	0	0	255	2	0	0	0	0	0	0	**257**	**0.060**
77.Life Sciences	2907	40	257	749	9	9	3941	213	0	85	0	**8210**	**1.921**
78.Mathematics	4859	0	2024	373	470	0	20251	2833	0	1596	0	**32406**	**7.581**
79.Microbiology	0	0	0	0	0	0	0	0	0	0	0	**0**	**0.000**
80.Physics	3312	2	2027	723	379	0	16062	865	0	1952	0	**25322**	**5.924**
81.Science	0	0	0	0	0	0	0	56	0	0	0	**56**	**0.013**
82.Statistics	1108	0	66	0	3	0	5268	5	0	0	0	**6450**	**1.509**
83.Zoology	1384	0	83	0	173	0	9466	278	0	0	0	**11384**	**2.663**
84.Anthropology	286	0	0	0	33	0	650	0	0	0	0	**969**	**0.227**
85.Economics	1145	19	103	0	542	0	2706	141	20	17	0	**4693**	**1.098**
86.Geography	408	8	212	0	62	0	1059	155	0	0	0	**1904**	**0.445**
87.Population Studies	0	0	0	57	0	0	0	0	0	0	0	**57**	**0.013**
88.Dairy Science	0	7	0	28	0	0	10	0	0	0	0	**45**	**0.011**
89.Veterinary & Animal Science	0	0	0	272	0	0	655	0	0	0	0	**927**	**0.217**
90.New Engineering & Technology	281	0	15607	1155	359	0	5838	6017	0	15244	0	**44501**	**10.411**
91.Other Medical Science	0	0	1321	314	101	69	0	432	0	498	0	**2735**	**0.640**
92.Other Science	0	14	6160	787	127	27	216	1191	0	3142	0	**11664**	**2.729**
Total	**35215**	**143**	**60012**	**15971**	**10112**	**611**	**190697**	**53391**	**27**	**61101**	**162**	**427442**	

Source: *DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16).*

Year 2013-14

Types→ Disciplines↓	Central University	Central Open University	Deemed University Pvt.	Deemed University Govt.	Deemed Univ. Govt. Aided	Inst.Under State Legislature Act	State Public University	State Private University	State Open University	Inst. Of National Importance	Others	Total	Percentage(P)
1.Agriculture	1656	0	161	848	507	0	11287	494	0	0	0	**14953**	**1.449**
2.Forestry	38	0	0	134	0	0	1300	0	0	0	0	**1472**	**0.143**
3.Horticulture	181	0	0	32	299	0	955	119	0	0	0	**1586**	**0.154**
4.Sericulture	0	0	0	0	18	0	11	0	0	0	0	**29**	**0.003**
5.Aeronautical Engineering	0	0	16	144	0	0	12	140	0	797	0	**1109**	**0.107**
6.Agriculture Engineering	96	0	1	46	298	0	811	13	0	581	0	**1846**	**0.179**
7.Architecture	0	0	155	30	0	0	16	76	0	350	71	**698**	**0.068**
8.Chemical Engineering	99	0	195	689	0	0	1089	77	0	4031	0	**6180**	**0.599**
9.Civil Engineering	940	0	2072	416	76	0	2382	1488	0	5099	0	**12473**	**1.209**
10.Computer Engineering	718	0	6562	1004	202	0	6752	5774	0	3711	0	**24723**	**2.396**
11.Dairy Technology	0	0	0	60	0	0	19	0	0	0	0	**79**	**0.008**
12.Electrical Engineering	134	0	2463	646	284	0	2385	816	0	4875	0	**11603**	**1.125**
13.Electronics Engineering	547	0	7002	454	116	0	4618	5322	0	3595	0	**21654**	**2.099**
14.Food Technology	309	0	21	6	78	0	863	85	0	902	0	**2264**	**0.219**
15.Information Technology	407	0	5698	1697	47	0	3036	3398	0	474	0	**14757**	**1.430**
16.Marine Engineering	0	0	3	28	0	0	48	0	0	0	0	**79**	**0.008**
17.Mechanical Engineering	105	0	2227	722	183	0	2935	3825	0	5152	0	**15149**	**1.468**
18.Metallurgical Engineering	0	0	0	203	0	0	248	11	0	1702	0	**2164**	**0.210**
19.Mining Engineering	0	0	0	204	0	0	19	5	0	381	0	**609**	**0.059**
20.Other Engineering & Technology	994	0	15721	1125	263		9298	2882	0	5451	0	**35734**	**3.464**
21.Transportation Planning	0	0	0	0	0	0	0	0	0	0	0	**0**	**0.000**
22.Planning	0	0	0	20	0	0	0	41	0	112	73	**246**	**0.024**
23.Urban Planning	0	0	0	12	17	0	30	0	0	0	43	**102**	**0.010**

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24.Fisheries Science	0	0	0	485	0	0	1692	0	0	0	0	**2177**	**0.211**
25.Food Technology	0	0	0	0	0	0	0	0	0	0	0	**0**	**0.000**
26.Home Science	166	0	660	0	360	0	3173	108	0	0	0	**4467**	**0.433**
27.Nutrition	106	0	0	0	245	0	114	93	0	0	0	**558**	**0.054**
28.Computer Application	3159	0	11666	6	472	0	24243	11000	0	2785	0	**53331**	**5.169**
29.Computer Science	1469	0	1853	118	1251	0	15462	2088	5	789	0	**23035**	**2.233**
30.Marine Science	120	0	0	34	0	0	1075	0	0	89	0	**1318**	**0.128**
31.Anatomy	45	0	180	0	0	8	7	63	0	85	0	**388**	**0.038**
32.Anesthesiology	16	0	250	5	0	105	53	29	0	184	0	**642**	**0.062**
33.Ayurveda	97	0	78	0	0	0	815	17	0	0	0	**1007**	**0.098**
34.Biophysics	0	0		0	0	0	75	0	0	86	0	**161**	**0.016**
35.Biostatistics	0	0	0	0	0	0	0	0	0	5	0	**5**	**0.000**
36.Bio Technology	1437	0	2540	0	513	5	8093	4331	0	1763	0	**18682**	**1.811**
37.Cardiology	0	0	68	0	0	41	8	6	0	111	0	**234**	**0.023**
38.Dentistry	79	0	1704	0	0	0	684	900	0	60	0	**3427**	**0.332**
39.Dermatology	0	0	101	0	0	0	20	19	0	66	0	**206**	**0.020**
40.Endocrinology	0	0	8	0	0	24	0	0	0	10	0	**42**	**0.004**
41.ENT	0	0	131	0	0	0	0	36	0	65	0	**232**	**0.022**
42.Forensic Medicine/ Toxicology	91	0	36	0	209	0	2	28	0	19	0	**385**	**0.037**
43Gastroenterology	0	0	24	4	0	27	0	0	0	15	0	**70**	**0.007**
44.General Medicine	31	0	696	0	0	90	2033	198	0	285	0	**3333**	**0.323**
45.General Surgery	305	0	313	0	0	61	261	160	0	168	0	**1268**	**0.123**
46.Gynaecology	12	0	302	0	20	20	0	38	0	233	0	**625**	**0.061**
47.Haematology	0	0	0	5	0	3	0	0	0	46	0	**54**	**0.005**
48.Hepatology	0	0	0	0	0	0	0	0	0	0	0	**0**	**0.000**
49.Homeopathy	0	0	2	0	0	0	0	122	0	0	0	**124**	**0.012**
50.Microbiology	778	0	574	5	192	53	4349	954	0	106	0	**7011**	**0.680**
51.Nephrology	0	0	20	2	0	22	0	0	0	63	0	**107**	**0.010**
52.Neurology	0	0	39	0	16	49	0	12	0	175	0	**291**	**0.028**
53.Nursing	0	0	817	41	86	108	0	336	0	31	0	**1419**	**0.138**
54.Oncology	0	0	6	0	0	15	0	0	0	52	0	**73**	**0.007**
55.Ophthalmology	0	0	83	0	0	0	0	10	0	248	0	**341**	**0.033**
56.Orthopaedics	28	0	172	0	35		28	20	0	57	0	**340**	**0.033**
57.Pathology	17	0	254	4	0	87	45	82	0	116	0	**605**	**0.059**
58.Pediatrics	5	0	177	4	29	26	0	68	0	301	0	**610**	**0.059**
59.Pharmacy	486	0	1644	2	503	0	3856	2245	0	662	0	**9398**	**0.911**
60.Physiology	8	0	93	0	32	9	12	28	0	104	0	**286**	**0.028**

Types→ Disciplines↓	Central University	Central Open University	Deemed University Pvt.	Deemed University Govt.	Deemed Univ. Govt. Aided	Inst.Under State Legislature Act	State Public University	State Private University	State Open University	Inst. Of National Importance	Others	Total	Percentage(P)
61.Plastic Surgery	3	0	0	0	0	1	0	0	0	17	0	**21**	**0.002**
62.Psychiatry	32	0	75	0	70	0	15	18	0	107	0	**317**	**0.031**
63.Public Health	0	0	272	7	411	0	117	70	0	141	0	**1018**	**0.099**
64.Radiology	19	0	123	4	0	0	16	21	0	114	0	**297**	**0.029**
65.Radiothrapy	0	0	10	0	0	49	0	0	0	0	0	**59**	**0.006**
66.Urology	0	0	8	0	0	30	0	0	0	24	0	**62**	**0.006**
67.Bio-Chemistry	899	0	338	107	265	24	3825	393	0	64	0	**5915**	**0.573**
68.Bio-Science	863	0	990	439	36	0	2484	235	0	1065	0	**6112**	**0.592**
69.Bio technology	0	0	0	0	0	0	0	0	0	0	0	**0**	**0.000**
70.Botany	1535	0	139	0	337	0	10100	385	0	0	0	**12496**	**1.211**
71.Chemistry	3934	2	2563	1320	729	0	21659	2295	0	3999	0	**36501**	**3.538**
72.Electronics	308	0	0	0	0	0	2968	0	0	0	0	**3276**	**0.318**
73.Environmental Science	2090	0	564	202	44	0	3578	133	0	37	0	**6648**	**0.644**
74.Genetics	121	0	78	82	0	0	916	1	0	0	0	**1198**	**0.116**
75.Geology	1198	0	0	79	0	0	4089	21	0	361	0	**5748**	**0.557**
76.Geo-Physics	43	0	0	396	1	0	314	0	0	0	0	**754**	**0.073**
77.Life Sciences	3154	0	305	451	8	20	2894	82	0	0	0	**6914**	**0.670**
78.Mathematics	5825	0	2013	424	530	0	21476	554	0	2945	0	**33767**	**3.273**
79.Microbiology	0	0	0	0	0	0	0	0	0	0	0	**0**	**0.000**
80.Physics	3483	0	2374	701	468	0	16500	1154	0	3279	0	**27959**	**2.710**
81.Science	52	0	0	0	0	0	236	185	0	1657	0	**2130**	**0.206**
82.Statistics	1128	0	182	0	3	0	5520	8	0	133	0	**6974**	**0.676**
83.Zoology	1443	0	178	0	185	0	10079	406	0	0	0	**12291**	**1.191**
84.Anthropology	228	0	0	0	33	0	727	9	0	0	0	**997**	**0.097**
85.Economics	1394	5	407	0	411	0	2971	277	24	412	0	**5901**	**0.572**
86.Geography	612	10	255	0	0	0	1266	189	0	0	0	**2332**	**0.226**
87.Population Studies	0	0	0	52	0	0	36	0	0	0	0	**88**	**0.009**
88.Dairy Science	0	0	0	69	11	0	15	0	0	0	0	**95**	**0.009**
89.Veterinary & Animal Science	27	0	0	595	44	0	1402	0	0	0	0	**2068**	**0.200**
90.New Engineering & Technology	0	0	538	60	209	0	0	1386	0	9081	0	**11274**	**1.093**
91.Other Medical Science	456	0	1649	682	24	192	36	340	0	645	0	**4024**	**0.390**
92.Other Science	922	0	5967	832	311	1	63	826	0	3924	0	**12846**	**1.245**
Total	**44448**	**17**	**85816**	**15737**	**10481**	**1070**	**227516**	**56545**	**29**	**73997**	**187**	**1031686**	

Source: *DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16).*

Year 2014-15

Types→ Disciplines↓	Central University	Central Open University	Deemed University Pvt.	Deemed University Govt.	Deemed Univ. Govt. Aided	Inst. Under State Legislature Act	State Public University	State Private University	State Open University	Inst. Of National Importance	Others	Total	Percentage(P)
1.Agriculture	1507	0	117	711	502	0	12900	575	0	0	0	**16312**	**3.032**
2.Forestry	56	0	0	206	97	0	609	0	0	0	0	**968**	**0.180**
3.Horticulture	426	0	0	97	165	0	893	166	0	0	0	**1747**	**0.325**
4.Sericulture	0	0	0	0	0	0	77	0	0	0	0	**77**	**0.014**
5.Aeronautical Engineering	0	0	274	186	0	0	0	24	0	1091	0	**1575**	**0.293**
6.Agriculture Engineering	53	0	0	21	163	0	937	1	0	637	0	**1812**	**0.337**
7.Architecture	0	0	171	257	0	0		443	0	1203	1120	**3194**	**0.594**
8.Chemical Engineering	111	0	207	142	0	0	1502	81	0	4896	0	**6939**	**1.290**
9.Civil Engineering	590	0	1331	361	0	0	2634	826	0	4616	0	**10358**	**1.925**
10.Computer Engineering	683	0	10144	400	266	0	10570	5236	0	5377	5	**32681**	**6.074**
11.Dairy Technology	0	0	0	125	0	0	15	0	0		0	**140**	**0.026**
12.Electrical Engineering	290	0	1330	490	100	0	2836	864	0	5163	0	**11073**	**2.058**
13.Electronics Engineering	619	0	5628	477	82	0	4745	3111	0	2504	0	**17166**	**3.191**
14.Food Technology	337	0	206	10	199	0	893	0	0		0	**1645**	**0.306**
15.Information Technology	550	0	1744	2388	176	0	6311	1477	0	419	0	**13065**	**2.428**
16.Marine Engineering	58	0	0	11	0	0	15	10	0	130	0	**224**	**0.042**
17.Mechanical Engineering	252	0	2340	559	108	0	2986	1626	0	5926	0	**13797**	**2.564**
18.Metallurgical Engineering	0	0	511	1	0	0	0	20	0	1650	0	**2182**	**0.406**
19.Mining Engineering	0	0	0	119	0	0	0		0		0	**119**	**0.022**
20.Other Engineering & Technology	1222	0	6345	1539	28	0	13797	5107	0	4618	0	**32656**	**6.070**
21.Transportation Planning	0	0	0		0	0	0	0	0	0	0	**0**	**0.000**

Types→ Disciplines↓	Central University	Central Open University	Deemed University Pvt.	Deemed University Govt.	Deemed Univ. Govt. Aided	Inst. Under State Legislature Act	State Public University	State Private University	State Open University	Inst. Of National Importance	Others	Total	Percentage(P)
22.Planning	0	0	0	205	0	0	0	6	0	0	175	**386**	**0.072**
23.Urban Planning	0	0	12	97	0	0		0	0	0	43	**152**	**0.028**
24.Fisheries Science	0	0	0	0	0	0	423	0	0	0	0	**423**	**0.079**
25.Food Technology	0	0	0	0	0	0		124	0	0	0	**124**	**0.023**
26.Home Science	213	0	852	0	178	0	2474	197	0	0	0	**3914**	**0.727**
27.Nutrition	130	0	224	0	155	0	305	0	0	0	0	**814**	**0.151**
28.Computer Application	3475	0	8571	12	527	0	12062	11506	0	2415	0	**38568**	**7.168**
29.Computer Science	1534	0	2869	381	1074	0	22884	1836	0	1004	0	**31582**	**5.870**
30.Marine Science	0	0	0	0	0	0	901	0	0		0	**901**	**0.167**
31.Anatomy	48	0	106	0	0	8	14	79	0	32	0	**287**	**0.053**
32.Anesthesiology	19	0	254	5	0	124	61	76	0	133	0	**672**	**0.125**
33.Ayurveda	0	0	183	0	18	0	584	45	0	0	0	**830**	**0.154**
34.Bio-Physics	0	0	3	0	0	0	0	0	0	0	0	**3**	**0.001**
35.Bio-Statistics	0	0	66	4	0	0	0	0	0	0	0	**70**	**0.013**
36.Bio-Technology	0	0	2677	0	0	0	1100	0	0	0	0	**3777**	**0.702**
37.Cardiology	0	0	37	0	15	47	0	0	0	50	0	**149**	**0.028**
38.Dentistry	44	0	1421	0	0	0	732	969	0	49	0	**3215**	**0.598**
39.Dermatology	0	0	107	0	0	0	0	39	0	40	0	**186**	**0.035**
40.Endocrinology	0	0	9	0	0	39	0	0	0		0	**48**	**0.009**
41.ENT	0	0	61	0	0	0	0	39	0	29	0	**129**	**0.024**
42.Forensic Medicine/ Toxicology	94	0	101	602	232	0	249	18	0	4	0	**1300**	**0.242**
43.Gastroentrology	0	0	39	56	0	44	0	0	0	3	0	**142**	**0.026**
44.General Medicine	33	0	1347	0	49	94	528	273	0	134	0	**2458**	**0.457**
45.General Surgery	610	0	446	0	0	74	262	208	0	16	0	**1616**	**0.300**
46.Gynaecology	16	0	323	0	22	30	89	95	0	72	0	**647**	**0.120**
47.Haematology	0	0	7	11	0	3	0	0	0	0	0	**21**	**0.004**
48.Hepatology	0	0	0	14	0	0	0	0	0	0	0	**14**	**0.003**
49.Homeopathy	0	0	0	0	0	0	0	90	0	0	0	**90**	**0.017**
50.Microbiology	0	0	787	146	570	0	500	0	0	120	0	**2123**	**0.395**
51.Nephrology	0	0	0	2	0	19	0	0	0		0	**21**	**0.004**
52.Neurology	0	0	60	118	10	58	0	0	0	76	0	**322**	**0.060**
53.Nursing	0	0	575	12	55	109	0	322	0	29	0	**1102**	**0.205**
54.Oncology	0	0	2	0	0	15	0	0	0		0	**17**	**0.003**
55.Ophthalmology	0	0	120	0	0	0	0	65	0	63	0	**248**	**0.046**
56.Orthopaedics	10	0	112	0	35	0	33	38	0	38	0	**266**	**0.049**

Types→ Disciplines↓	Central University	Central Open University	Deemed University Pvt.	Deemed University Govt.	Deemed Univ. Govt. Aided	Inst. Under State Legislature Act	State Public University	State Private University	State Open University	Inst. Of National Importance	Others	Total	Percentage(P)
57.Pathology	25	0	291	0	0	65	52	0	0	74	0	**507**	**0.094**
58.Paediatrics	15	0	284	1	27	34	59	64	0	175	0	**659**	**0.122**
59.Pharmacy	550	0	2529	49	413	0	3454	1949	0	616	0	**9560**	**1.777**
60.Physiology	15	0	89	0	0	9	17	42	0	16	0	**188**	**0.035**
61.Plastic Surgery	4	0	0	0	0	6	18	0	0		0	**28**	**0.005**
62.Psychiatry	5	0	55	196	90	0	0	21	0	37	0	**404**	**0.075**
63.Public Health	89	0	379	10	275	0	195	97	0	119	0	**1164**	**0.216**
64.Radiology	0	0	240	6	0	0	4	50	0	59	0	**359**	**0.067**
65.Radiotherapy	3	0	40	0	0	52	21	7	0	70	0	**193**	**0.036**
66.Urology	0	0	18	0	0	31	0	0	0	0	0	**49**	**0.009**
67.Bio-Chemistry	993	0	404	132	268	31	0	441	0	9	0	**2278**	**0.423**
68.Bio-Science	1298	0	1204	113	6	0	2639	469	0	1839	0	**7568**	**1.407**
69.Bio technology	1536	0	2802		398	25	7328	2255	0	1616	0	**15960**	**2.966**
70.Botany	1702	0	125	697	408	0	9450	501	0	319	0	**13202**	**2.454**
71.Chemistry	4291	0	3245	705	843	0	23018	3599	0	5317	0	**41018**	**7.624**
72.Electronics	365	0	41	0	0	0	3033	0	0	22	0	**3461**	**0.643**
73.Environmental Science	1888	0	528	181	151	0	3665	155	0	278	0	**6846**	**1.272**
74.Genetics	124	0	85	9	0	0	899	0	0	0	0	**1117**	**0.208**
75.Geology	1318	0	0	678	1	0	4510	108	0	1126	0	**7741**	**1.439**
76.Geo-Physics	32	0	0	230	0	0	411	0	0	56	0	**729**	**0.135**
77.Life Sciences	3128	0	59	218	79	5	3700	24	0	178	0	**7391**	**1.374**
78.Mathematics	4844	0	4568	421	703	0	23556	757	0	3519	0	**38368**	**7.131**
79.Microbiology	849	0	0	0	0	63	4418	1567	0	0	0	**6897**	**1.282**
80.Physics	4279	0	3415	1054	699	0	17355	2058	0	3567	0	**32427**	**6.027**
81.Science	0	0	142	36	0	0	18	74	0	3101	0	**3371**	**0.627**
82.Statistics	1298	0	99	0	0	0	5790	100	0	288	0	**7575**	**1.408**
83.Zoology	1433	0	187	0	289	0	10254	623	0	0	0	**12786**	**2.376**
84.Anthropology	444	0	2	0	0	0	648	0	0	0	0	**1094**	**0.203**
85.Economics	3490	19	1367	0	810	0	2456	228	22	605	0	**8997**	**1.672**
86.Geography	1231	0	379	0	62	0	1504	153	0	0	0	**3329**	**0.619**
87.Population Studies	0	0	0	52	0	0	20	0	0	0	0	**72**	**0.013**
88.Dairy Science	0	0	0	389	88	0	0	0	0	0	0	**477**	**0.089**
89.Veterinary & Animal Science	0	0	0	724	72	0	757	0	0	0	0	**1553**	**0.289**
90.New Engineering & Technology	0	0	7389	2737	159	0	1200	0	0	14320	0	**25805**	**4.796**

Types→ Disciplines↓	Central University	Central Open University	Deemed University Pvt.	Deemed University Govt.	Deemed Univ. Govt. Aided	Inst. Under State Legislature Act	State Public University	State Private University	State Open University	Inst. Of National Importance	Others	Total	Percentage(P)
91.Other Medical Science	79	0	622	500	76	182	502	586	0	261	0	**2808**	**0.522**
92.Other Science	0	0	2979	748	6	8	17	1608	0	2340	0	**7706**	**1.432**
Total	**48308**	**19**	**85286**	**19651**	**10749**	**1175**	**235889**	**53128**	**22**	**82464**	**1343**	**538034**	

Source: *DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16).*

Year 2015-16

Types→ Disciplines↓	Central University	Central Open University	Deemed University Pvt.	Deemed University Govt.	Deemed Univ. Govt. Aided	Inst.Under State Legislature Act	State Public University	State Private University	State Open University	Inst. Of National Importance	Others	Total	Percentage(P)
1.Agriculture	1920	0	130	0	735	0	13029	305	0	0	0	**16119**	**3.131**
2.Forestry	74	0	0	492	183	0	477	0	0	0	0	**1226**	**0.238**
3.Horticulture	266	0	0	27	170	0	1857	94	0	0	0	**2414**	**0.469**
4.Sericulture	0	0	0	0	0	0	0	0	0	0	0	**0**	**0.000**
5.Aeronautical Engineering	0	0	23	181	0	0	16	1	0	230	0	**451**	**0.088**
6.Agriculture Engineering	2	0	0	41	0	0	678	1	0	643	0	**1365**	**0.265**
7.Architecture	0	0	224	257	0	0	0	43	0	1154	176	**1854**	**0.360**
8.Chemical Engineering	0	0	244	127	0	0	1370	67	0	3724	0	**5532**	**1.075**
9.Civil Engineering	115	0	2188	427	0	0	1474	1056	0	8017	0	**13277**	**2.579**
10.Computer Engineering	203	0	4807	1132	0	0	6309	2859	0	4798	25	**20133**	**3.911**
11.Dairy Technology	0	0	0	136	94	0	0	0	0		0	**230**	**0.045**
12.Electrical Engineering	148	0	1756	875	0	0	1772	498	0	7269	5	**12323**	**2.394**
13.Electronics Engineering	517	0	5451	303	0	0	7057	1595	0	4277	0	**19200**	**3.730**
14.Food Technology	312	0	0	11	210	0	736	51	0		0	**1320**	**0.256**

Types→ Disciplines↓	Central University	Central Open University	Deemed University Pvt.	Deemed University Govt.	Deemed Univ. Govt. Aided	Inst.Under State Legislature Act	State Public University	State Private University	State Open University	Inst. Of National Importance	Others	Total	Percentage(P)
15.Information Technology	394	0	3835	1722	0	0	2299	2638	0	2077	13	**12978**	**2.521**
16.Marine Engineering	0	0	0	30	0	0	1097	0	0		0	**1127**	**0.219**
17.Mechanical Engineering	128	0	1986	594	0	0	2012	1896	0	7708	0	**14324**	**2.782**
18.Metallurgical Engineering	14	0	20	229	0	0	133	0	0	2107	0	**2503**	**0.486**
19.Mining Engineering	0	0	0	164	0	0	4	0	0	541	0	**709**	**0.138**
20.Other Engineering & Technology	539	0	14706	1996	0	0	7241	1479	0	18930	0	**44891**	**8.720**
21.Transportation Planning	0	0	0	0	0	0	0	0	0	0	0	**0**	**0.000**
22.Planning	0	0	0	205	0	0	11	11	0	0	137	**364**	**0.071**
23.Urban Planning	0	0	0	97	0	0	52	27	0	0	139	**315**	**0.061**
24.Fisheries Science	0	0	0	637	0	0	800	0	0	0	0	**1437**	**0.279**
25.Food Technology	0	0	0	0	0	0	0	0	0	51	0	**51**	**0.010**
26.Home Science	194	0	23	0	252	0	3405	56	0	0	0	**3930**	**0.763**
27.Nutrition	126	0	13	0	164	0	297	140	0	0	0	**740**	**0.144**
28.Computer Application	3265	0	7796	13	1084	0	22371	6173	0	3391	0	**44093**	**8.565**
29.Computer Science	1449	0	1541	173	195	0	12517	2315	0	0	0	**18190**	**3.533**
30.Marine Science	42	0	12	0	0	0	0	0	0	0	0	**54**	**0.010**
31.Anatomy	27	0	106	0	0	9	16	78	0	36	0	**272**	**0.053**
32.Anesthesiology	36	0	346	0	0	118	69	22	0	180	0	**771**	**0.150**
33.Ayurveda	59	0	365	0	18	0	775	39	0	0	0	**1256**	**0.244**
34.Bio-Physics	0	0	0	1	0	0	0	0	0	0	0	**1**	**0.000**
35.Biostatistics	0	0	21	0	0	0	0	0	0	0	0	**21**	**0.004**
36.Bio-Technology	1761	0	0	0	4	0	0	2350	0	106	0	**4221**	**0.820**
37.Cardiology	0	0	245	0	0	26	0	4	0	35	0	**310**	**0.060**
38.Dentistry	44	0	1812	0	0	0	831	66	0	0	0	**2753**	**0.535**
39.Dermatology	0	0	118	0	0	0	29	41	0	44	0	**232**	**0.045**
40.Endocrinology	0	0	20	0	0	26	0		0	2	0	**48**	**0.009**
41.ENT	0	0	114	0	0	0	0	41	0	32	0	**187**	**0.036**
42.Forensic Medicine/ Toxicology	0	0	43	0	0	0	7	17	0	51	0	**118**	**0.023**

Types→ Disciplines↓	Central University	Central Open University	Deemed University Pvt.	Deemed University Govt.	Deemed Univ. Govt. Aided	Inst.Under State Legislature Act	State Public University	State Private University	State Open University	Inst. Of National Importance	Others	Total	Percentage(P)
43.Gastroentrology	0	0	11	15	0	27	0	0	0	2	0	**55**	**0.011**
44.General Medicine	60	0	921	2	0	77	341	97	0	161	0	**1659**	**0.322**
45.General Surgery	333	0	386	0	0	60	259	90	0	138	0	**1266**	**0.246**
46.Gynaecology	30	0	383	0	0	0	80	3	0	132	0	**628**	**0.122**
47.Haematology	0	0	9	0	0	2	2	0	0	12	0	**25**	**0.005**
48.Hepatology	0	0	0	0	0	0	0	0	0	0	0	**0**	**0.000**
49.Homeopathy	0	0	1	0	0	0	0	88	0	0	0	**89**	**0.017**
50.Microbiology	0	0	0	12	0	61	0	0	0	0	0	**73**	**0.014**
51.Nephrology	0	0	23	0	0	18	0	0	0	0	0	**41**	**0.008**
52.Neurology	0	0	41	267	0	31	0	13	0	32	0	**384**	**0.075**
53.Nursing	0	0	635	13	22	114	0	377	0	64	0	**1225**	**0.238**
54.Oncology	0	0	4	44	0	0	0	0	0	4	0	**52**	**0.010**
55.Ophthalmology	0	0	187	0	0	0	29	42	0	71	0	**329**	**0.064**
56.Orthopaedics	33	0	196	0	0	0	35	0	0	43	0	**307**	**0.060**
57.Pathology	47	0	354	0	0	62	52	122	0	68	0	**705**	**0.137**
58.Paediatrics	18	0	279	0	0	26	73	46	0	173	0	**615**	**0.119**
59.Pharmacy	521	0	3216	50	0	0	3965	1564	0	343	0	**9659**	**1.876**
60.Physiology	22	0	117	79	0	9	7	19	0	25	0	**278**	**0.054**
61.Plastic Surgery	10	0	0	0	0	6	0	0	0	5	0	**21**	**0.004**
62.Psychiatry	14	0	254	145	70	0	15	22	0	45	0	**565**	**0.110**
63.Public Health	85	0	293	9	246	0	237	18	0	90	0	**978**	**0.190**
64.Radiology	29	0	212	0	0	15	4	0	0	92	0	**352**	**0.068**
65.Radiothrapy	4	0	4	0	0	34	25	0	0	16	0	**83**	**0.016**
66.Urology	0	0	0	0	0	20	0	0	0	3	0	**23**	**0.004**
67.Bio-Chemistry	1106	0	408	167	0	20	4663	398	0	70	0	**6832**	**1.327**
68.Bio-Science	1195	0	899	594	0	0	2636	156	0	647	0	**6127**	**1.190**
69.Bio-Technology	0	0	3037	0	0	37	7691	0	0	0	0	**10765**	**2.091**
70.Botany	1868	0	119	20	0	0	11073	973	0	0	0	**14053**	**2.730**
71.Chemistry	5087	0	3390	1280	0	0	24391	3685	0	4866	0	**42699**	**8.294**
72.Electronics	0	0	0	0	0	0	0	0	32	0	0	**32**	**0.006**
73.Environmental Science	2198	0	516	191	0	0	3972	187	0	77	0	**7141**	**1.387**
74.Genetics	125	0	47	128	0	0	1059	2	0	0	0	**1361**	**0.264**
75.Geology	1386	0	3	547	0	0	4813	5	0	508	0	**7262**	**1.411**
76.Geo-Physics	8	0	0	2	0	0	449	0	0	199	0	**658**	**0.128**
77.Life Sciences	3199	0	485	923	5	0	4068	98	0	239	0	**9017**	**1.752**
78.Mathematics	4868	0	2479	675	0	0	25721	1452	0	2633	1	**37829**	**7.348**
79.Microbiology	947	0	779	0	0	0	4484	1042	0	51	0	**7303**	**1.419**
80.Physics	4816	0	3232	1300	0	0	18853	2191	0	3954	0	**34346**	**6.672**

Types→ Disciplines↓	Central University	Central Open University	Deemed University Pvt.	Deemed University Govt.	Deemed Univ. Govt. Aided	Inst.Under State Legislature Act	State Public University	State Private University	State Open University	Inst. Of National Importance	Others	Total	Percentage(P)
81.Science	237	0	2	19	0	0	28	590	0	80	0	**956**	**0.186**
82.Statistics	1527	0	912	0	0	0	6143	62	0	180	0	**8824**	**1.714**
83.Zoology	1804	0	142	0	0	0	12010	1002	0	0	0	**14958**	**2.906**
84.Anthropology	311	0	0	0	0	0	761	13	0	0	0	**1085**	**0.211**
85.Economics	1750	19	742	0	508	0	3806	644	0	11	1	**7481**	**1.453**
86.Geography	690	0	226	0	62	0	1732	362	0	0	0	**3072**	**0.597**
87.Population Studies	0	0	0	52	0	0	59	0	0	0	0	**111**	**0.022**
88.Dairy Science	0	0	0	465	0	0	51	0	0	0	0	**516**	**0.100**
89.Veterinary & Animal Science	12	0	0	1431	46	0	441	0	0	0	0	**1930**	**0.375**
90.New Engineering & Technology	0	0	81	1920	0	0	0	44	0	81	0	**2126**	**0.413**
91.Other Medical Science	101	0	1693	331	0	52	0	115	0	74	0	**2366**	**0.460**
92.Other Science	0	0	3780	519	0	0	0	185	0	10708	0	**15192**	**2.951**
Total	**46076**	**19**	**78443**	**21070**	**4068**	**850**	**232769**	**39670**	**32**	**91300**	**497**	**514794**	

Source: *DST Project 2016 Quantification of R&D Resources in higher education in India, BHU (Derived from the AISHE database 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16).*