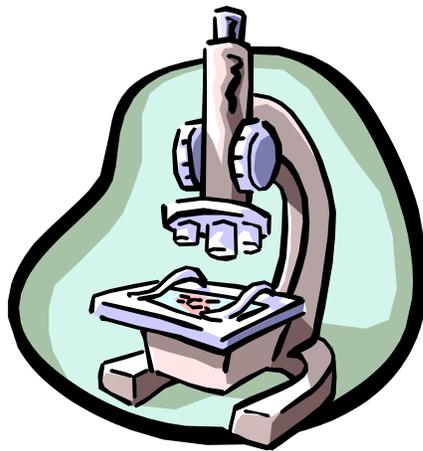


P.G. DEPARTMENT OF ZOOLOGY

**DEPARTMENTAL PROFILE
FOR
ACCREDITATION BY
NAAC**



**S. M. M. TOWN PG COLLEGE, BALLIA
M.G.KASHI VIDYA PEETH, VARANASI**

P.G. Department of Zoology

1. Faculty Profile – Our faculty

	Name and Designation	Area of Research and Specialization
	Dr. D. Roy Head and Associate Professor M.Sc., Ph.D. 9450776526	Reproductive Physiology of freshwater prawns Research Paper-21 Ph.D.Thesis-03 M.Sc.Thesis-5 Project-02, National Seminar-15, International Seminar-02
	Dr.Sucheta Prakash M.Sc., Ph.D. Assistant Professor (SS)	
	Dr. Sanjay Kumar Srivastva M.Sc., Ph.D. Lecturer (Ad-hock)	
	Vacant Teaching Staff	03

Supporting Staff

Sri. Rajesh Kumar Ram	Laboratory Assistant
Vacant 01 post for Laboratory Assistant	
Sri Chheteshwar Yadav	Laboratory Attendant/Parichar
Vacant-01	Laboratory Attendant/Parichar

PG course in Zoology was introduced in 1986, though UG department was established in 1965. However, the department started research work with funding through various minor and major projects since 1973 as a UG department itself. In 1981, a **major project** funded by **IFS Sweden** was conducted by Dr S.J.Srivastava of this department. In all, about **12 major** and **13 minor projects** have been run by the department. Three members have got trained in modern biological techniques in laboratories of **ITRC, Lucknow and BHU**, Varanasi under **SERC Visiting Fellowship of DST**. One member (Dr S.J.Srivastava) has worked for about one and half years in **Washington University (US)** under exchange programme. In June 06, Dr D.Roy presented a paper at a conference of **FAO (UN)** in Mondsee (**Austria**).

Dr Shiavaji Srivastava:

Dr. Srivastava has a long experience of working in the field of reproductive physiology of freshwater fish and has left many indelible landmarks on his way. He has conducted many research projects funded by various national and international agencies (IFS, Sweden; CSIR, New Delhi; ICAR, New Delhi; UGC, New Delhi; Deptt of Environment, Lucknow) and published more than 50 research papers in journals of national and international repute.

During his Doctoral work at Gorakhpur University, Gorakhpur, under the able supervision of Prof. Krishna Swarup, FNA, he studied the pituitary-gonadal axis of murrels and identified six types of tinctorial cells in the pituitary gland corresponding to ACTH and Prolactin in RPD, GH, TSH and gonadotropins in PPD and MSH in PI. Seasonal changes in gonadotropic cells in relation to reproductive cycle was also worked out

Dr. Srivastava extended his work by studying the photoperiodic and thermal regulation of reproduction in murrel and derived the outstanding conclusion that long photoperiod and higher temperature enhance gonadal recrudescence and prolong the spawning period. Thus, he suggested ways to get an “all-year-round or out of season production of eggs” by advancing gonadal maturation and spawning periods through photothermal manipulation.

Dr. Srivastava's next target was the study of vitellogenin (Vg) in a murrel. Vg is a specific protein in fish blood, synthesized in liver under estrogen stimulation and transported to the ovary, that gives rise to yolk protein in the growing oocytes and leads to ovarian maturation. Dr. Srivastava's group has isolated, purified, partially characterized and quantified Vg by electrophoretic, immunological and competitive ELISA techniques .

Another feather in Dr. Srivastava's cap was added during his work at Washington University, USA when he worked on analogs designing of glycoprotein hormones (FSH, LH, TSH and HCG) by site directed mutagenesis and found these analogs to be more active than native hormones.

Apart from his main theme of research, Dr. Srivastava has sporadically ventured into fields of reproductive toxicology and studied the toxicity effects of Malachite green (MG), cadmium (Cd) and industrial effluents on reproductive physiology of fish.

Dr Arun Kumar Srivastava:

Dr. Srivastava has a long experience of working in the field of toxicology. He has unfolded the effects of a broad spectrum of toxicants (separately and in combination)- from Kepone, Chlordecone, Malachite green, Fuchsin Basic, Industry effluents, various metals like cadmium, mercury, lead etc. to dyes and detergents.

As early as in 1979, he published a marvelous report on fungal infection of the young hatchlings of *Labeo rohita*. He extended his work by studying the applicability of UV radiation in controlling fungal infection of fish. He also established a co-relation between cold shock and plasma chloride level of catfish.

Dr. Srivastava did his doctoral work on the toxicity of a pesticide, chlordecone on a catfish *H. fossilis* at Gorakhpur University under the supervision of the Toxicology baron, Prof. Anil Kumar Srivastava. During that period, he investigated the histopathological effects of this toxicant on various tissues like liver, gonads, kidney of fish; various biochemical effects like those on carbohydrate metabolism and blood chloride metabolism as well as its effects on various hematological parameters. (His complete list of publications attached).

Dr. Srivastava has also done an exhaustive study on the toxicity of a widely used dye, malachite green. He has reported its acute toxicity and

effects on carbohydrate metabolism, various hematological parameters, histopathology of liver, pituitary gonadotropins as well as gonads of fish.

Dr. Srivastava has done another marvelous work on the toxicity of the effluents of Govt. Opium Factory, Ghazipur, an extremely prohibited place, under a project specially sanctioned to him by department of Custom & Excise (Ministry of Finance).

Apart from his mainstream toxicological study, Dr. Srivastava has many a time enjoyed working in quite new arenas, for eg. purification technology of drinking water by activated charcoal, potassium permanganate, silica gel and renal effects of salinity etc. He has also worked on residue analysis of toxicants in animal tissues.

However, looking at the seriousness of the Arsenic menace in Ballia district, Dr. Srivastava is now focusing his attention on this problem. He is collecting water, hair, and nail samples from various areas of the districts and sending them to certain laboratories for arsenic analysis. Further, he is designing the bioassay experiments for analyzing arsenic toxicity to animal tissues.

Dr D. Roy

Dr Roy's principal area of research has been the Reproductive Biology and Neuroendocrinology of freshwater prawns, particularly *Macrobrachium gangeticum*. inhabiting the lower reaches of Ganga river, a species on the verge of extinction. This is mainly due to the construction of Farraka dam, though some other factors have also contributed.

In the first phase of his work, he studied the entire biology of this species- including the feeding behaviour of its adults and juveniles and its annual reproductive cycle of both sexes. In the second and most important phase, he studied the larval history of this species. It is worth mentioning here that the species has a dual mode of life cycle. While the adults feed and breed in freshwaters, the larvae need salinity for their development. Dr Roy has succeeded in enabling the larvae to cross all the larval stages

in artificially developed saline water. He has also done it by developing salinity with the help of rock salt and salt pan residue.

Dr Roy's team is concentrating on the modulation of the reproductive cycle of females (ie, induced breeding) through their neuroendocrine manipulation. They have worked out the principal neuroendocrine structures of *M. gangeticum*- The X-organ-sinus gland complex, brain and thoracic ganglion and examined the seasonal changes in neurosecretory cells of these organs as well as their effects on gonadal maturity. They have performed the eye stalk ablation experiments as well as injected the prawns with the extracts of these organs and found that while eye stalk has a negative effect on gonadal maturity, eye stalk and brain enhance its maturity. However, it needs further study to develop the technique of induced breeding in this species. Dr Roy has presented a paper on depopulation of Gangetic prawn in a symposium organized by FAO (UN) at Mondsee, Austria.

2. Student Profile:

Though the students who seek admission in this institution come mostly from economically and socially backward segments of the society, yet their performance is appreciable. It is further appreciating that girl students usually constitute about 50% or sometimes more than 50 % of the total strength. Success rate of UG students is about 60% while it rises to more than 90% in case of PG students. Our students are doing well in different walks of life after completing their studies from this institution. Most of the students come from Hindi medium schools, hence with a poor proficiency in English language.

3.Changes in Courses:

In 2001, we have adopted the syllabi recommended by UGC for both UG and PG courses almost in Toto. Our head of the department was convener of the Board of Studies that introduced the changes.

4.Success rate and drop out rate:

The department has showed a good trend in success rate of students. The success rate of UG students is more than 60%. In case of PG students, it is more than 90%.The drop out rate is almost negligible.

5.Learning Resources of the department:

The department is equipped with following resources for our students-

A. Library: For UG students, there is a central library. But for PG and research students, there is a departmental library with sufficient books and journals.

B. Computers: At present, there is one computer in the department.

C. Laboratories: There is a big well-equipped laboratory for UG students. Two laboratories equipped with necessary amenities are there for PG students. There is a separate laboratory for physiology and biochemistry practical. There is a research laboratory with working facility for about ten students and necessary equipments required for histological and biochemical experiments.

D. Other Resources: The department has a rich archive of museum and prepared slides for both UG and PG students. We have a good collection of models and charts for easy learning of students.

6. Modern teaching methods: We use overhead and slide projectors apart from normal blackboard teaching. We also organize students' seminars and group discussion. Many of our faculty uses their personal ICT resources in the process of their teaching

7. Academic and personal Counseling: The staff members take keen interest in providing academic counseling to our students, particularly those pursuing PG courses. We keep them updated regarding various avenues available to them after their post-graduation. We make our

maximum efforts for genuine placements of our research students after they complete their doctoral work. Further, our students do not hesitate to consult us if and when they have some personal problems.

8. Faculty development programmes: There are four readers in our department and they have completed the required numbers of refresher courses. Three lecturers have done one orientation course each. Three of our faculty have also availed SERC visiting fellowship of DST to get trained in frontier areas of biology. Two of our faculties have done their Ph.D under Faculty Improvement Programme.

9. Participation in academic activities:

Teaching- All the faculty members are regularly involved in teaching of both UG and PG classes (theory and practical), each faculty taking about 24 periods per week. Apart from teaching in our parent department, Dr D.Roy of this department is a regular guest faculty too in the department of Biotechnology.

Research-Three of our faculty members are actively involved in research. Their research profiles are mentioned above.

Consultancy-

(i) **Dr S.J. Srivastava** has been extending his consultation to various fish farms.

(ii) **Dr Arun K. Srivastava** has also been engaged in providing his consultancy to certain industries, like the Ghazipur opium factory, regarding pollution.

(iii) **Dr D. Roy** is a nominated counselor to Distance Education Programme of Dev Sanskriti University, Haridwar

Other Academic Activities-The head of this department (Dr Anil Kishore Srivastava) has served as convenor, RDC (Zoology) as well as convenor, academic council

of VBS Purvanchal University, Jaunpur during 2003-05. Our faculty members are routinely involved in other college activities, like proctorship, paper setting, evaluation, etc.

10.Collaboration with other departments and institutions: Dr S.J. Srivastava of this department is working in collaboration with Department of Botany of this institution on a project on cyanotoxins funded by CST, Lucknow. He is also doing some research work in collaboration with College of Fisheries, Dholi, Muzzaffarpur and Department of Zoology, RHSPG College, Singramau, Jaunpur.

11. Priority Areas of Research, Ongoing Projects and Publications of last two years

Dr S.J.Srivastava-

Priority areas of research - Reproductive physiology of fish and Toxicology

Ongoing Projects

(i)Major Project- Evaluation of cyanobacterial toxicity on Makhana plant (*Euryale ferox*) and a common carp, *Cyprinus carpio*. Funded by CST, Lucknow, Total outlay-Rs 5,44,000.00 [Completed]

(ii) Minor project- Studies on the toxicity of commonly used prophylactic drugs (Malachite green, formaline and Pyceze) in a common carp, *Cyprinus carpio*[Completed].

Publications in past two years-

- (i) S K Chaturvedi, R Singh and **S J Srivastava, 2007**. Effects of Photoperiod and temperature on the ovarian activity during prespawning and spawning periods in a murrel, *Channa punctatus* . J.Purv. Acad. Sc.13-B. 309-315
- (ii) Singh R., Chaturvedi S.K., Abhinav, and **Srivastava S.J. (2008)**. Histomorphological changes in the interstitial cells in relation to testicular cycle of a murrel, *Channa punctatus* (Bloch). J. Exp. Zool. India 11(1): 39-43
- (iii) Singh R., Abhinav, Chaturvedi S K, **Srivastava S J. (2008)** Seasonal changes in the prolactin cells in relation to the ovarian cycle in *Channa punctatus* (Bloch). J.Biochem. Cell Arch. 8(1): 55-58
- (iv) Singh R. Chaturvedi SK, Abhinav and Srivastava SJ, **(2008)**. Ovarian regression in *Channa punctatus* (Bloch)- Effects of photoperiod and Temperature. Fishing Chimes. 28(6): 17-20
- (v) P.K.Srivastava and **S.J.Srivastava. 2009**. Suraha lake [Jai Prakash Narayan Bird Sanctuary], Ballia, UP, A good natura resource of biodiversity that highights the need for conservation. Fishing Chimes. 29[4]. 28-31
- (vi) P.K.Srivastava and **S.J.Srivastava. 2009**. Check ist of fish species richness of Jai Prakash Narayan Bird Sanctuary, Suraha lake, Ballia, UP, India. Our nature 7. 207-211
- (vii) Singh R. Chaturvedi SK, Abhinav and Srivastava SJ, **(2009)**. Ovarian regression in *Channa Punctatus*, Effects of Photoperiod and Temperature. Fishing Chimes. 28 [10-11]. 24-27.

- (viii) **S.J.Srivastava**, A.K.Gupta, S.K. Chaturvedi, Abhinav and R.Singh. **2009** . Effects of short term therapeutic bath of malachite green and formalin on certain hematological parameters of a freshwater catfish, *Heteropneustes fossilis* Bloch. J.Of Exp.Zool. India.12[1]. 79-83
- (ix) Chaturvedi SK, Singh R and **S.J.Srivastava**. **2009**. Environmental regulation of reproductive cycle in *Channa punctatus*. Recent Advances in Ecophysiology of Fish, pg 86-91
- (x) Singh R Chaturvedi SK, and **S.J.Srivastava**. **2010**. Effects of photoperiod and temperature on ovary and gonadotropic cells during resting phase of reproductive cycle in *Channa punctatus*. J. of Progressive Science 10 [1]. 12-17
- (xi) N. Chaturvedi, A.K.Srivastava, Abhinav and **S.J.Srivastava**. **Communicated**. Studies on acute toxicity of malachite green and Pyceze on certain freshwater fish, *Cyprinus carpio*, *Colisa fasciatus* and *H.fossilis* .
- (xii) N. Chaturvedi, A.K.Srivastava and **S.J.Srivastava**. **Communicated**. Microcystin- LR induced histopathological and biochemical changes in the liver of a common carp, *Cyprinus carpio*

Dr D. Roy-

Priority areas of research -Reproductive biology of freshwater prawn

Ongoing Projects -Minor Project- Studies on neuroendocrine factors released from the X-organ sinus gland complex of a freshwater prawn, *Macrobrachium dayanum*, UGC, Rs 25,000. **Completed**

Publications in Past two Years

- i. D. Roy (2007)** Biology of a freshwater prawn *Macrobrachium gangeticum*. **Fishing chimes** .26 (10):146-151 (Review)
- ii. A.K.Gupta and D.Roy. (2007)** Histoarchitecture of X-organ sinus Gland Complex of *Macrobrachium gangeticum*. Proceedings of The National Academy of Science. 77(B),1 ; 35-39
- iii. Punit K. Srivastava and D.Roy. (2007).** Effects of certain organic manures on mass culture of zooplankton and physico-chemical parameters of water. *Fishing Chimes*. 27 (1): 82-84
- iv. Punit K. Srivastava and D.Roy (2007).** Effects of organic manure oncentration on population density of *Brachionus calysiflorous* and *Daphnia carinata* . *J. PAS*.13(B): 100-
- v. Praveen Kumar and D.Roy (2007).** Acute toxicity of malachite green to the freshwater prawn, *Macrobrachium dayanum*. *J. Adv. Zool*: 28(1): 29-31
- vi. A.K. Gupta and D. Roy (2007).** Seasonal changes in the neurosecretary cells of the X-Organ Sinus Gland Complex of *Macrobrachium gangeticum*. *J. Adv. Zool*. 28(2): 89-92
- vii. Punit K. Srivastava and D.Roy (2007).** Effects of Preservation on Biochemical composition of *Ceriodaphnia cornuta*. *J. Inland Fish Soc., India*. 39(1): 7-11
- viii. Praveen Kumar and D. Roy (2008).** MG induced changes in certain Biochemical parameters in the muscles of the freshwater prawn, *M.dayanum*. *J. PAS*. 14:13-22
- ix. B.Yadav and D.Roy (2008).** Vitellogenesis in freshwater prawn, *M. lamerrii*. *J. PAS*. 14: 9-12

x. A K.Gupta and **D.Roy. (2009)**. Oogenesis in freshwater prawn, *Macrobrachium gangeticum*, Fishing Chimes, 28(10-11). 84-87

xi. B.Yadav and D.Roy(2009). Vitellogenesis in a freshwater prawn, *M. dayanum*. J. Adv. Zool 30(1): 24-26

xii.S.P.Tiwari and D.Roy(2010). Effects of certain yogic practices on blood sugar and anxiety levels of diabetes mellitus patients. Journal of Progressive Science.vol.01. 47-51

In Press-

Anjita Pandey, Alok Singh, **D.Roy**, Hausila Pandey, Mohan kumar and H.S.Shukla. (**InPress**). Prediction of risk by joint ER/PR status in cancer of breast and gall bladder. **Journal of surgical oncology**.

Dr. Arun Kumar Srivastava

Priority areas of research- Toxicology

Publications in last two years

- i. Srivastava D.K & **Srivastava A.K.(2007)** Heavy metal cadmium (Cd)- induced histoarchitectural changes in certain tissues of a freshwater catfish, *H. fossilis*(Bloch). Fishing Chimes. 27(7): 56-57
- ii. Srivastava Anupama, DK Srivastava and **Arun K. Srivastava. (2007)**. Acute Toxicity of certain pollutants (alone and in combination) to the freshwater catfish, *H. fossilis* (Bloch). Poll. Res. 26(3): 351-354
- iii. Srivastava D.K & **Srivastava A.K.(2007)** Acute toxicity of nutritional toxicants, especially metals and its effects on the behaviour of a catfish, *H. fossilis* (Bloch). J. Liv. World 14(2): 24-30
- iv. Pathak P, DK Srivastava & A.K.Srivastava (**2007**). An anionic detergent, Nirma induced haematological changes in a freshwater catfish, *H.fossilis* (Bloch). Indian J. Environ & Ecoplan.. 14(3): 557-562

- v. Pathak P, AK Srivastava (2007). Effects of detergent on gills and kidney of *H.fossilis* (Bloch). Flora and fauna 13(2): 401-407
- vi. Srivastava DK, AK Srivastava (2008). Toxicological effects of Mercuric Chloride in the haematological parameters of a freshwater catfish, *H.fossilis* (Bloch). J.Adv. Zool. 29(1): 5
- vii. Bhavya Misra, A K Srivastava and A K S Chauhan. 2008. Effects on growth and development of *Callosobruchum chinensis* due to some vegetable oils used as grain protectants. J. Liv. World. 15 [2] :11-16
- viii. Anupama Srivastava, D K Srivastava, AK Srivastava. 2009. Interactive effects of certain aquatic pollutants on haematology and liver functions of a freshwater catfish, *H. fossilis*. Recent Advances in Ecophysiology of fish..165-172
- ix. Sanjay K. Srivastava, AK Jha, AK Srivastava. 2009. Toxicological effects of lead on haematology parameters and use of Thiamine as a detoxicant on a freshwater catfish, *H.fossilis*. J.Haematol and Ecotoxicol. 4[1]. 15-21
- x. Saumya and AK Srivastava. 2009. Acute toxicity of nutritional metals like Cadmium and Chloride and mercuric chloride and its effects on the behaviour of a catfish, *H.fossilis*. Flora and Fauna. 15[1].115-118.

List of publications in Conference Proceedings during last five Years

1. Ram Singh, S.K. Chaturvedi, S.J. Srivastava (2004) Effects of photoperiod and temperature on the ovarian activity in murrel,

- Channa punctatus (Bloch), Proceedings of National Symposium on Biodiversity, Biotechnology & Environ. Toxicol in New Millennium, AEB, Institute of Science, Mumbai.
2. **D. Roy** and A.K. Gupta (2004) Roles of eye stalk, brain and thoracic ganglion in regulating the gonadal maturity of a freshwater prawn *M.gangeticum*. Proceedings of National Symposium on Biodiversity, Biotechnology & Environ. Toxicol in New Millennium, AEB, Institute of Science, Mumbai.
 - 3 **D. Roy** (2004) Neuroendocrine structures of a freshwater prawn *M. gangeticum* and their role in modulating its reproductive behaviours. International Workshop on Cell Biology, IBAB, Banglore
 - 4.A.K.Gupta and **D.Roy**.(2005) Structure and Function of X-Organ Sinus Gland Complex of a Freshwater Prawn *M.gangeticum*. The national Academy of Science, 75th Annual Session. Pondicherry University, Pondicherry, p51-52
 5. D.Roy. 2006. *Macrobrachium gangeticum* is on the verge of extinction due to farakka dam on Ganga River .EIFAC Symposium on Hydropower, Flood management and water abstraction: Implications on Fish and Fisheries. Organized by FAO (UN), 14-17 June Mondsee, Austria

12. Placement record of past students: Placement record of our Ph.D. students are given below

(Names in parentheses are supervisors' names)

1. Dr V.K.Srivastava (1992) (Dr S.R.Singh)
Present Status- Reader, J N College, Pasighat, Arunachal Pradesh
Current Research Interests- Ecology of lotic and lentic water bodies of Arunachal Pradesh.
2. Dr Ram Singh (1992) (Dr S.J.Srivastava)
Present status- Senior Lecturer, S C Degree College, Ballia
Current Research Interests- Photoperiod regulation of reproduction in fishes
3. Dr D. Roy (1994) (Dr S R Singh)
Present Status- Reader, Department of Zoology, SMM Town PG College, Ballia
Current Research Interests- Neuroendocrinology of Freshwater prawns
4. Dr Ranjana Sinha (1996) (Dr Arun Kumar Srivastava)
Present Status- Scientist, CIFRI, Barrackpur, WB
Current Research Interests – Fish Pathology
5. Dr N.D. Singh (1997) (Dr S J Srivastava)
Present Status- Principal of an Intermediate College at Farukhabad
Current Interests- Promotion of Science Awareness Programmes
6. Dr Manoj Tewari-(1999) (Dr Arun Kumar Srivastava)
Present status- Teacher
7. Dr Rajiv Kumar srivastava (1999) (Dr S J Srivastava)
Present status- Scientific Assistant in a Govt. Dairy, Parag, Ballia

8. Dr Prem Prakash Srivastava (1999) (Dr S J Srivastava)
Present status- Scientist, CIFE, Mumbai
Current Research Interests- Formulation of Nutritional feeds for various fishes
9. Dr Preety Pandey (2000) (Dr Arun Kumar Srivastava)
Present status- Lecturer in a degree college
10. Dr Sanjay Srivastava- (2001) (Dr Arun Kumar Srivastava)
Present status- Lecturer (part time) in the parent department
11. Dr Madhumita Srivastava (2006) (Dr Arun Kumar Srivastava)
Present status- Part time lecturer in Biotechnology Department
12. Akhilesh Kumar Gupta (2006) (Dr D. Roy)
Present status-Lecturer in a degree college
13. Dr Dhananjay srivastava (2008) (Dr Arun K. Srivastava)
Present status- SRF
14. Dr Punit Srivastava. (Dr D. Roy) 2010
Present status- lecturer in a degree college
15. Dr Praveen Kumar (Dr D. Roy) 2010
Present status- lecturer in intermediate college
16. Dr Sanjay Chaturvedi (Dr S.Srivastava) 2009, working in a private sector

13. Plan of action of the department for the next five years:

A. Teaching: We plan to improve our Post Graduate teaching by taking following measures-

1. Library-

Many new papers have been introduced and many new chapters have been added in the existing syllabus. Therefore, our library needs to be equipped with sufficient text and reference books which can

help students prepare these subjects. More so, the increasing number of students also demands increase in the number of books.

We also want to improve the infrastructure facilities of our library and to equip it with some computers, internet facility and some on-line journals.

2.Laboratory-

New experiments in practical syllabus- like Molecular Biology experiments have been introduced. We plan to equip our laboratory with necessary instruments required for these experiments listed on next page.

3..Dissertation-

We regularly organize a seminar presentation for our PG students as a part of their syllabus. Further, we wish to introduce a dissertation system for final year students. For this purpose, we need to expand our laboratory facilities.

B. Research: The research plan of our faculty for the next five years is as follows-

Dr Shivaji Srivastava- His future plan is to conduct a comparative study of vitellogenin (Vg) and very low density lipoprotein (VLDL) regulatory systems and their role in lipid metabolism in ovarian maturation in fish.

Dr Arun Kumar Srivastava- His future plan is to study Arsenic toxicity.

Dr D.Roy- His future plan is to culture *M .gangeticum*, a Ganga river prawn facing the threat of extinction.

