

Department of Biotechnology

Experimental learning

The learning process is made more engaging by the use of experimental learning, participatory learning, and problem-solving techniques. Bangalore Central University has included provisions for experimental and participatory learning in the design of all of its curricula. The students are encouraged to join any industry, advanced laboratory, MNC, etc. or can design the experiments in accordance with the Bangalore Central University syllabus, either for internships or projects in the fourth semester, while the professors are encouraged to embrace problem-solving approaches. A key component of CIA in all programmers is the use of student-centered approaches by departments to provide project work, assignments, quizzes, presentations, etc.

Every semester, the curriculum is planned in a comprehensive way that gives both theory and practice equal weight. The department has frequent meetings to discuss academic, curriculum, co-curricular, and extracurricular activities. Departmental minutes are taken during these meetings. Each separate faculty with a specific specialization is given a schedule and task.

Practical exercises are carried out and developed to the level of research projects. Depending on the overall number of students in each part (both UG and PG), students are divided between 2–5 batches. Every student is encouraged to complete practical's both alone and in groups. To determine the significances and effects of the experiments, the practical results are combined. The initiatives are created and carried out as "in house projects" at the PG levels. The department has seven labs available, including two for undergraduate biotechnology students, two for genetics students, one for graduate students, and the other two for plant tissue culture and animal tissue culture. The experimental/laboratory technique is utilized to personally introduce the pupils to the facts through hands-on experience. Students perform the necessary research to confirm the relevant facts and procedures.

The activity-centered technique and the student-centered method are more reliable and successful in delivering educational experiences. Students show interest in and gain knowledge through activities such as creating charts, creating experimental models that are similar to or functional, utilizing materials and equipment that are affordable, durable, and useful, and giving learning experiences. Teachers utilize the inductive-deductive technique in laboratories in addition to giving lectures to help students acquire a scientific mindset. During lab instruction, faculty personnel employ ICT through power point presentations and e-contents.

Professors of the department are very active in encouraging students to participate in agricultural extension activities.

Industrial tours/training at institutions like Biocon, Biozeen, IIHR, ICAR, CSIR etc.

, extension activities are a part of experiential and participatory learning as they help students to become familiar with modern research techniques quite early in their courses.

Agricultural extension activities, specifically field visits/educational excursions/study tours and the organization of camps conducted by students for development, in the program "From school to community".

Visiting horticulture, floriculture and agriculture fields helps students work cooperatively, interact with each other, take responsibility and develop confidence. It stimulates students' interest and creates opportunities for freedom of thought and the free exchange of different views.



Bb



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Department of chemistry and Biochemistry.

The college has well equipped labs in order to provide the study centered environment and to emphasize the fundamental understanding in chemical, physical and biological principles, effective application of scientific method, critical thinking, quantitative analysis and intensive experimental learning activities.

The goal is nurturing the young brain with in-depth and advanced scientific knowledge and capable of rational thinking. Chemistry department has five well equipped labs among which three are utilized for Undergraduate course (B.Sc.) and two are utilized for Post graduate course (M.Sc.), for both chemistry and biochemistry streams. The labs are having all the chemicals, glassware and instruments required for the experiments and their dissertation work. The entire lab in charge and lab attender will be trained always regarding how to handle hazardous chemicals. Stock of chemicals and glass wares is well maintained and audited from time to time.

When one chooses to study chemistry, it is not just important by necessary to attain the practical skills also. We make our students to do practical regularly through proper guidance and follow systematic protocols. The practical classes in our college is meant to teach you not only the practical skills that you may need to be a scientist but also other skills such as problem-solving, time management, organization. We believe that the practical knowledge gained during undergraduate level should also teach them how to work safely in a chemistry laboratory and with chemicals as they will learn how to assess the potential dangers associated with every chemical they use.

We keep doing to give instructions to the students before starting the experiments for the particular semester curriculum. The students are not permitted in lab without wearing the safety measures especially the lab coat. Three of our chemistry labs are exclusively given for carrying out the undergraduate practical under both Chemistry and Biochemistry streams. The teachers always put interest to monitor students' progress in handing their lab from first to last year.

By the end of third year of their degree, the students are expected to have learned;

- Basic experimental skills such as titrations, synthesis and purification of organic and inorganic compounds.
- The safe and confident use of chemical apparatus and chemicals.

- How to obtain accurate results.
- To make careful observation of chemical reactions and correlate the experiments they do in labs with the theory classes.
- To analyze and interpret the experimental data.

These skills thus acquired by the students make them to work confidently in industries and other laboratories after their degree.

Lab-01:

This lab is allotted for Organic chemistry experiments. 3rd semester B.Sc. students carry out the experiments like preparation of organic compounds, determination of Physical constants like Melting point for different organic solids and Boiling point of different organic liquids. This lab is equipped with electric water bath (thermostat), Boiling point apparatus (condensation unit) and melting point apparatus (Thiel's tube) and other apparatus required to conduct organic chemistry experiments. This lab includes instrumentation room for the storage of instruments, store room for the storage of chemicals and apparatus issue room, from where the instruments will be issued to the students whenever they require apparatus and to collect it back. Each practical is of 3 hours duration. In the end of each semester students must undergo practical model exams before they go for final university exam.



Lab-02:

This lab is allotted for Inorganic as well as Physical chemistry experiments. 1st semester B.Sc. students learn Inorganic chemistry experiments like titrations and estimations of inorganic compounds, in 2nd semester they learn the Physical chemistry experiments like determination of physical constants like Viscosity, Surface tension, Distribution Coefficient of binary liquids, Molar Mass of electrolytes and non-electrolytes, transition temperature of a salt hydrate and degree of dissociation of electrolytes, etc. In 6th semester they perform the physical chemistry experiments including Potentiometric, Colorimetric and Conductometric titrations for the estimation of compounds.

This lab is equipped with electric water bath (thermostat), hot air oven, Distillation unit, fume exhaust hood's, Viscometer, stalagmometer, Colorimeter, PH meter, potentiometer, electrodes, Cooling Centrifuges, Electrophoretic units, reflux condenser, magnetic stirrer, etc. This lab also has an apparatus issue room, from where the instruments are issued to the students.



Lab-03:

This lab is allotted for inorganic chemistry experiments like systematic semi-micro qualitative analysis of inorganic salt mixture and estimation of inorganic compounds.

It is equipped with Muffle furnace, centrifuge machines, electric water bath and instruments required for inorganic chemistry experiments. This lab also includes Instrumentation room and Apparatus issue room.



Lab 4 (Biochemistry PG)

We have Biochemistry Lab is well equipped with Basic instruments, Chemicals, Glassware, Immunological kits and Molecular Biology Kits. Our Biochemistry lab met the required facilities, instruments for M.Sc experiments and project work as per University designed experiments.

Biochemistry lab is equipped with Colorimeter, PH meter, Cooling Centrifuges, Refrigerator with Freezer, Incubator, Hot Plates, Water bath, Burette stands, Electronic weigh balance, Bunsen burner, Micropipette (0.5 μ l – 10 μ l, 2 – 20 μ l, 20 – 200 μ l and 200 – 1000 μ l), Trans Illuminator (UV), Basic Microscope, Electrophoretic units both horizontal and vertical, etc.

Clearly, we have displayed an information about laboratory Do's and Don'ts in entry of our lab.

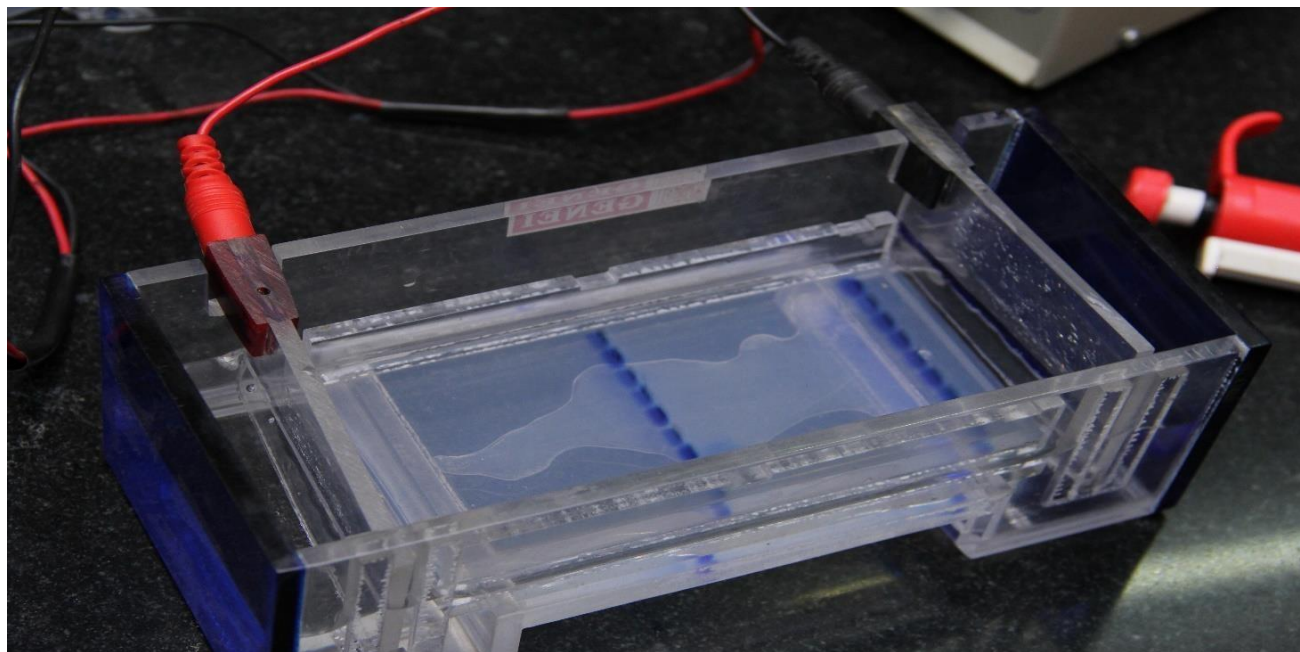
Stock will be taken care every year. Lab-in charge and Attenders are trained with basics of chemistry. Lab-in charge is taught to take care of hazardous chemicals. Laboratory is always maintained. It is pre-prepared before starting any lab class or practical.

The first semester of the new curriculum is dedicated to instruction in modern biochemical concepts and methods, including amino acid, protein and nucleic acid estimations. Estimations of Vitamin, Hydrolysis and Chromatography (Thin layer, Paper, Ion Exchange), while the second semester focuses on. Double immune diffusion and radial immune diffusion ELISA, immune-blotting techniques, Rocket electrophoresis. Basic python programming, ANOVA using R and Data mining using R Students also taught through computational biology. Biochemical enzyme kinetics K_m , V_{max} , Inhibition studies, PH and temperature optimization also learned from second semester.

Third semester mainly focused on clinical Biochemistry and molecular biology. Estimations of glucose, urea, Hb, Cholesterol, calcium, Creatinine, Bilirubin, SGOT and SGPT. Isolation, quantification and characterization of genomic and plasmid DNA, from plant and Bacteria. Concepts of PCR, RT-PCR, South blotting also learned through demonstration program through external laboratory experts in our lab.

Fourth semester focus on genetic engineering and protein chemistry. Extraction and isolation of enzymes (phosphatases / esterases / amylases) from Insect / Microbial / Plant sources. Preparation of Competent cells and Synthesis of cDNA. Isolation and characterization of gene fragments for cloning and Restriction digestion of isolated plasmid DNA are done in our lab.

Students have to do project for final semester as per their curriculum. They have to submit their dissertation record in university. Students generally do their project work in our Biochemistry lab under the guidance of some teacher. We have equipment for phytochemical extraction units like Soxhlet extractor apparatus. Students apply the methods and concepts from the first, second and third semester knowledge to design and execute a project work in their fourth semester. The year- long course concludes with groups of students preparing a manuscript (scientific paper) through lab PC and orally presenting a scientific poster that details their findings.



DEPARTMENT OF CHEMISTRY & BIOCHEMISTRY LAB SAFETY Do's & Don'ts

Do's

- Wear a chemical resistant apron.
- Use the chemicals, water and gas very economically to avoid pollution.
- Read the procedure from the manual and listen carefully the instructions given by the teacher before starting any experiment.
- Keep your work area clean and clutter free.
- Handle organic chemicals very carefully while heating as they are highly inflammable and wear goggles during qualitative analysis.
- Know the location of all safety and emergency equipments used in the lab including, First-aid kit, Fire extinguisher, fire alarm and the emergency exits.
- Dispose all chemicals, broken glass pieces, used filter papers and other lab materials into the proper containers as directed by the instructor.
- Before leaving the laboratory, gas and water taps must be closed tightly and replace lids or caps on reagent bottles.
- Report ALL accidents, hazards or chemical spills to the instructor (no matter how small). Do not panic.
- If your lab Partner is hurt, immediately and loudly call to get the teacher's attention. DO NOT PANIC.
- When heating liquids in a test tube, always point the test tube away from other student.
- Any breakage of glass/failure of equipment must be reported to the teacher.

Don'ts

- Do not wear bulky or dangling clothing.
- NEVER experiment on your own.
- NEVER add water to an acid.
- NEVER attempt to taste, smelling of gases, or touch chemicals without instructions.
- NEVER use electrical equipment around water.
- NEVER mix chemicals before asking the instructor.
- NEVER return unused chemicals to the original container.
- NEVER leave the lab without washing your hands.
- Do not spoil or erase the labels pasted on the reagent bottles.
- Students are not allowed to work in Laboratory alone or without presence of the teacher.
- Absolutely no running, practical jokes, or horseplay is allowed in the laboratory.
- Do not use mobile phone in laboratory area.
- NEVER place chemicals directly on the balance pan during weighing. Never weigh a hot object.

Lab 4 (Chemistry. PG).

Laboratory work is an established part of courses in chemistry in higher education. The original reasons for its development lay in the need to produce skilled technicians for industry and highly competent workers for research laboratories and 'hands-on' laboratory time is part of wider process of learning. In consideration of this, our college provides separate well-equipped laboratory for post graduate students.

The practical experimentation reinforces the material which have learned in class and it gives students a chance to apply their knowledge. As per the curriculum Inorganic/ Physical chemistry experiments and Organic chemistry experiments were carried out by I year and II year M.Sc., students respectively. The lab equipped with chemicals, glassware's, instruments, working tables, and can accommodate 25 students per session. To perform the experiments lab equipped with instruments like PH meter, calorimeter, conductometer, potentiometer, magnetic stirrer etc. It also has fume hood, fire extinguisher, waste disposal unit and exhaust fans. The lab in-charge and lab attenders trained regarding handling and storage of chemicals, reagent preparation, glassware cleaning, instruments calibration and stock maintenance.

In Inorganic practical's students learn inorganic salt analysis, Inorganic complex preparations, gravimetric and volumetric analysis of salts. In Physical chemistry, they always learn chemical kinetic studies, thermodynamic related experiment, colorimetric, potentiometric, conductometric experiments. In organic chemistry students learn about analysis of organic compounds and synthesis of various organic compounds via single or multi step reactions, separation and analysis of binary mixture of organic compound. Along with it they also perform isolation and estimation experiments.



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Department of Computer Science

The computer lab plays a crucial role in facilitating various academic activities to our students, and it is essential to ensure its efficient operation and maintenance to fulfill the needs of students as per with the industry standards.

The computer lab is located in Level 4 and level 5 of this campus and is equipped with computers. These computers are regularly updated to ensure they meet the required specifications for running modern software and applications. Each lab is accessible to 60 students and staff members during regular working hours.

The computers in the lab are well-maintained, and regular hardware checks are conducted to ensure they are functioning optimally. However, it is recommended that a hardware upgrade plan be developed to keep pace with technological advancements and changing academic requirements.

The lab is equipped with a variety of software applications necessary for academic purposes, including Microsoft Office Suite, programming environments, statistical analysis tools, and internet browsers. Regular software updates are performed to keep the systems secure and up-to-date. The computer lab is connected to the institution's high-speed internet connection, providing students and staff with fast and reliable internet access.

The network infrastructure is regularly monitored for performance and security. We recommend periodic reviews of the network infrastructure to ensure it continues to meet the growing demands of users. Regular maintenance schedules are in place to clean the lab, update software, and perform hardware checks.

It is important to continue these routine maintenance tasks to prolong the lifespan of equipment and maintain a conducive working environment. A dedicated technical support team is available during lab hours to assist users with any technical issues they may encounter. It is crucial to ensure that the support team remains well-trained and up-to-date with the latest technologies to provide effective assistance. Security is of paramount importance in a computer lab environment. Measures should be in place to safeguard both physical assets and data. This includes access control, regular backups, antivirus software, and security awareness training for lab users.



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Department of Mathematics

Mathematics Lab is well equipped with 20 computers with internet facility and LCD projector.

The mathematics lab provides an opportunity for the students to discover mathematics through doing. This lab gives a platform for the students to solve mathematical problems through different softwares like scilab, maxima and python. This also helps the students to visualize some mathematical problems in graphical format which helps in better understanding of the concept. Mathematics lab is a place to enjoy mathematics through informal exploration. It is a space to explore and design new mathematical activities.

The mathematics lab is a place where anybody can experiment and explore patterns and ideas.



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Department of Microbiology

In the department of microbiology, there are two laboratories for UG and one laboratory for PG available. These laboratories are equipped with basic instruments required for conducting the experiments prescribed by the Bangalore Central University. For each practical course, two faculties are assigned to conduct the experiments and the students are provided with hands on training of each experiment. The experimental observations are monitored and verified by the faculty in charge. The objectives, protocols, observations, results and discussions of each experiment conducted are systematically recorded and documented.

In addition to the regular practical courses of UG and PG programmes, project work is also carried out for the IV semester M.Sc students. Generally, the project work is done for the students in a group of 3-4 students. At the end of the semester, the project reports are submitted to the University and viva-voce for each student is conducted to evaluate the project work.

The project work introduces the PG students to the Research planning, execution and documentation. The students are also trained to write the research paper on their project work and the same will be published in a research journal with help of the project guide.

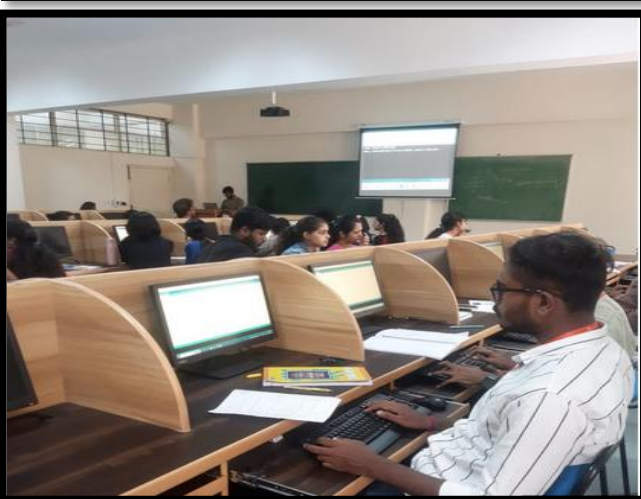


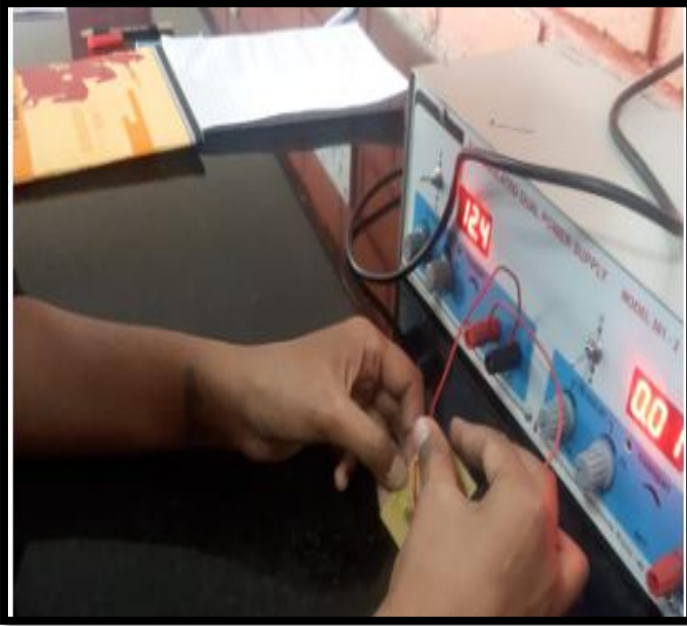
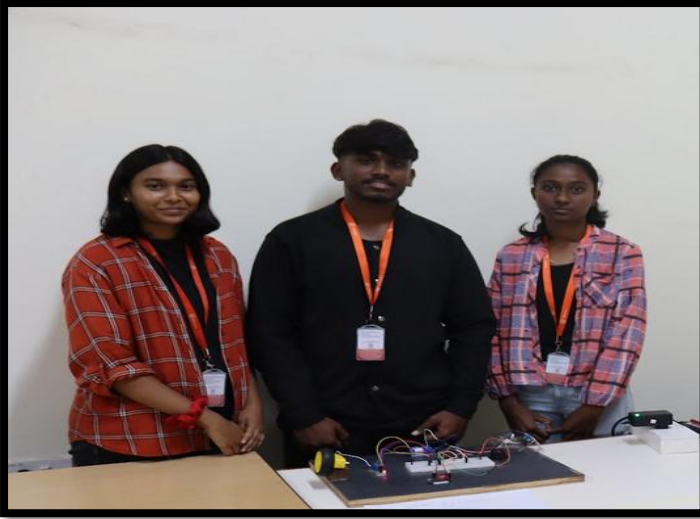
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DEPARTMENT OF ELECTRONICS

OBJECTIVE OF ELECTRONICS LAB

- Aptitude to apply Logic thinking and Basic Science knowledge for problem solving in various fields of electronics both in industries and research.
- To acquire experimental skills, analysing the results and interpret data. Ability to design / develop / manage / operation and maintenance of sophisticated electronic gadgets / systems / processes that conforms to a given specification within ethical and economic constraints.
- Capacity to identify and implementation of the formulate to solve the electronic related issues and analyse the problems in various sub disciplines of electronics.
- Gain the knowledge of programming the system using C programming language.
- The ability to code and simulate any digital function in Verilog HDL.
- Learn good coding techniques required for current industrial practices





Vatshala-4

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Department of Humanities

Media Lab

With the advancement of technology, it is important to cater to the needs of the media. In addition to this, the Journalism department, a part of the Humanities department, has made sure to have all the required equipment for the benefit of the students.

The lab is equipped with still and video cameras to help the students in experiencing the real world tasks like reporting, photography, videography, news presentation with greenscreen setup and other related desktop applications. This shall enable the students to practice before they enter the field of Journalism.

Coming to the practical perspective, the Journalism syllabus is set by the Bengaluru City University as per NEP 2020. With this, the students are exposed to the real life set up of the media world. As a part of their curriculum, the young journalists learn to use the DSLR camera, Video camera, Tripods, microphones, and the lighting equipment extensively. Students are free to use the equipment (under faculty supervision) to cover programs, events and gatherings in the college premises. This exposure builds them to encounter several other big events.

For the ease of teaching and learning, students are divided into batches of 15-20. Each experiment is performed individually and in groups based on the availability of and the procedure they follow. After this, the students shall enter the details of the experiment in the laboratory record for academic purposes.

The media lab is also used for the creative club where interviews are conducted by students under the guidance of faculty members and senior students. The motto of the media lab is served with practice. As told earlier, the advancement in technology surely calls for constant learning and upskilling in the field.



CORE COMMITTEE, RAMAIAH 360+1



GROUND REPORTING



STUDIO NEWS SHOOT



360 ° + 1

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RAMAIAH
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Department of psychology

Historically, psychology was considered academically as a component of philosophy until the late 19th century; a separation arose through the application of the scientific empirical method. The scientific empirical method replaced philosophical analysis as the primary method for approaching problems and added an additional source of information linked to the hermeneutic (interpretive) method in order to gain insight. Wilhelm Wundt established the first psychological laboratory in Leipzig in 1875; his influence was widespread. Psychology is a field of science aiming at understanding humans.

Wundt is commonly regarded as the founding father of Psychology, which established itself as a science around the beginning of the twentieth century. In 1879, Wundt founded the first psychological laboratory of the world in Leipzig, Germany, where he mainly studied sensations and feelings by employing experimental methods.

The turn to experimental methods of psychological investigation was closely linked to the controversial nature of introspection. Wilhelm Wundt, who played a major role in the launching of experimental psychology, believed that the psychological laboratory provided the only conditions under which reliable introspective data could be gathered (Danziger 1990).

In Ramaiah we have a fully equipped laboratory for the purpose of the study of human behaviour and analyse the personality of individuals. Here the students are trained in various aspects of psychology test ranging from simple questionnaire to apparatus based skill requiring tests. The students administer these tests on peers for better understanding the methodology.

This lab was established in the year 2010 and the faculties work with an objective of nurturing aspiring psychologists with knowledge related to various disciplines, i.e., Clinical Psychology, Child Psychology, Industrial Psychology, Cognition, and other frontier fields of Applied Psychology.

Here in MSRCASC the psychology lab is well equipped with different types of experiments-questionnaires, instrument and apparatuses, aiming to provide efficient learning for students along with fun understanding of human behaviour and mind. The lab is fully furnished with tables, chairs and racks. safety measures are followed seriously making sure no one is hurt while using the apparatuses.

The Bangalore City University has also framed the practical syllabus which covers the cognitive, emotional, behavioural and aptitude aspects of psychological tests.



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