

## **Research Facilities at Karnatak University, Dharwad.**

At Karnatak University, excellence in research is accomplished and sustained through pedagogical training, perseverance, and interdisciplinary approaches. In order to achieve higher and sophisticated research standards, the University houses advanced cutting-edge research infrastructure and facilities. The University, through its well-equipped network of highly skilled faculty, postdoctoral fellows, research scholars, post-graduate students and collaborators, is working towards advancing research by receiving grants from various funding agencies such as UGC, DST, DBT, CSIR, ICMR, ICAR, ICHR, ICPR, ICSSR, MOUF, MHRD, NCW, NCERT, SCRC etc., through different schemes and programs like UPE-FAR-I, IPLS, PURSE, FIST, SAP, RUSA, CPEPA and SAIF. Availing these facilities, the University is creating unique research and training opportunities and increasing its competitiveness for externally funded projects and grants. All the constituent individual departments and Post Graduate centres of the university have state-of-the-art research facilities that are available to the students and researchers. The students are also provided with uninterrupted 24×7 library facilities and internet access to pursue their research work. In order to promote research among young faculties, the University has funded seed grants to motivate, initiate, and continue research in their respective fields. Establishing new facilities and upgrading the existing ones is a continuous process.

The University has endeavoured to explore as many domains of knowledge as possible with seven faculties on its main campus, viz., Arts, Commerce, Education, Law, Management, Science and Technology, and Social Sciences. Apart from these, the University has various PG centres, administrative sections, central instrumentation facilities, supporting services, and residential areas.

The university has prepared and implemented policies such as collaboration guidelines, guidelines for consultancy, guidelines for deputation of teachers, guidelines for incentives, guidelines for innovation incubation, guidelines for Intellectual Property Rights, guidelines for patent, guidelines for plagiarism, guidelines for research ethics and guidelines for seed grant to glorify the research in the international level. All the faculty members of different faculties of the University are renowned researchers and academicians in their respective subjects and domains with significant research output. All the departments are equipped with independent departmental libraries and internet facilities. Science departments have their own instrumentation facilities in addition to the central facility of the University (University Scientific Instrumentation Centre), botanical garden, museum (Plant and animal science) and animal house facility to accelerate the research. Arts, Commerce, Education, Law, Management, languages and Social Science have excellent research facilities, few to mention include language laboratory, laboratory for Braille, yoga centre, multimedia studio and different peetas and study chairs etc.

Following are the major departments/centres which host various instruments to carry out research.

### **University Scientific Instrument Centre (USIC)**

University Scientific Instrument Centre hosts various facilities and instruments for both Research and Educational purpose. These instruments cater to the needs of physical, chemical, biological, and earth sciences in addition to other fields including Applied Genetics, Biochemistry, Biotechnology, Microbiology, Physics, Geology, Pharmaceutical, Medical, Agricultural sciences, Nano-science, Polymer Science, and Materials science. The instruments are maintained by qualified and dedicated technicians. In addition to the following list of instruments, further details can be found at <https://www.kud.ac.in/USIC.php>.

Sl. No.	Instrument	Model
1	Confocal work station with correlation spectroscopy & high resolution imaging	LSM 880
2	Bio safety cabinet	BS-2422-A2
3	Contact Angle meter	DMS - 401
4	Electrospinning unit	Supper - ES -1
5	Vertical Deep Freezer (-20°C to -40°C)	Blue Stars DWFL - 270
6	Vertical Deep Freezer (-80°C)	Cryocube F570
7	Particle sizer and Zeta potential	SZ-100Z
8	Potentiostat/ Galvanostat	CHI660E
9	CO <sub>2</sub> Incubator	Cell Xpert C-170
10	Real time PCR system	CFX 96
11	Polarized microscope	Leica 2700M
12	Gas Chromatography	Clarus - 690
13	High resolution FTIR Spectrometer with Imaging facility	Nicolet IN – 10
14	Sonicator	Hbio HPS – 750 IINA
15	Total Reflection Fluorescence Resolution (TXFR) Spectrometer	S2 Picofox
16	Vibration sample magnetometer	EZ 7
17	PEM Fuel cell workstation	FCTS 120
18	HPLC (Quaternary pump)	Agilent – G1331B
19	HPLC (Isocratic pump)	Agilent – G1330A
20	Fluorescence Spectrometer	F-7000
21	Fluorescence Microscope	Motic – BA 410
22	Sonicator	Vibro cell
23	Inverted Microscope	Motic – AE 2000
24	Flow Cytometer	BD Accuri C6i
25	Automatic Digital Polarimeter	ADP – 102
26	Imaging System	Herolab
27	Advanced Protein Assay System (Proteomics Analyzer)	OCTET RED 384
28	Molecular modelling hardware/ software	LAB SETUP ACER

### Department of Applied Genetics

P. G. Department of Applied genetics has research facility along with the individual faculty research laboratories. Following are the instruments/equipment available for researchers.

Sl. No.	Instrument
1	PCR machine
2	Gel-Doc
3	Laminar airflow
4	Cold centrifuge
5	Deep freezer (-20 °C)
6	Stereo microscopes
7	Light microscopes

### Department of Zoology

P. G. Department of Zoology has facilities for research, hosting animal house approved by CPCA, museum and central instrumentation facility along with the individual faculty research laboratories. Following are the instruments/equipment available for researchers.

Sl. No.	Instrument	Model
1	Semi-automatic microtome	Leica
2	Phase contrast microscope with image analyzer	Olympus BX51
3	Stereomicroscope with image analyzer	Olympus SZX16
4	Inverted microscope	Olympus IX71
5	Milli Q water	EVOQUA
6	UV Spectrophotometer double beam with Computer system	Systronics
7	Digital Weigh balance (2)	Wensor
8	Camera Lucida Stereomicroscope	Leica MZ6 & LEICA 10446193
9	Light Microscope with Image analyzer	Magnus MLXi Plus
10	Light Microscope	Magnus MLXi Plus
11	Colorimeter	Systronics 113
12	Gel documentation system with transilluminator	VILBER LOURMAT
13	Standard Vertical Electrophoresis with power unit	Hoefer SE 600 Ruby
14	PCR	Biorad Mycycler
15	UV-Transilluminator	Biobee Tech

### Department of Botany

P. G. Department of Botany has research facilities with plant museum and central instrumentation facility along with the individual faculty research laboratories. Following are the instruments/equipment available for researchers.

Sl. No.	Instrument
1	HPLC
2	PCR
3	Gel documentation system
4	Trinocular fluorescence microscope with camers
5	UV spectrophotometer
6	Deep freezer
7	Cold room
8	Orbital shaker
9	Lyophilizer
10	Fermenter
11	Rotary microtome
12	Kjeldahl digestion and distillation system

### Department of Biochemistry

P. G. Department of Biochemistry has central research facility along with the individual faculty research laboratories. Following are the instruments/equipment available for researchers.

Sl. No.	Instrument
1	q-RT-PCR
2	AKTA-Prime
3	Laminar airflow
4	Deep freezer (-20 °C)
5	UV-Spectrophotometer
6	Phase contrast microscope
7	Light microscopes
8	Freeze dryer
9	Cold centrifuge
10	Analytical balance
11	Flow-cytometer
12	CO2 Incubator
13	Cell culture hood

### Department of Chemistry

P. G. Department of Chemistry has central research facility along with the individual faculty research laboratories. The department has following instruments procured under different programs in the last five years.

Sl. No.	Name of the instrument	No of instruments
1	PotentiometerEquiptronics model 606	2
2	Conductivity meterElico CM 180	2
3	Stop watch	3
4	Electric Bunsen burner with energy regulator	5
5	Digital colorimeter with 8 filters	2
6	Silver electrodeEquiptronics	4
7	Calomel electrode	4
8	pH meter	2
9	Hot air oven	1
10	Water bath with 24 holes	2
11	Digital weighing balance	2
12	Magnetic stirrer without hot plate Remi	5
13	Distillation set up	4
14	Hot air oven	1
15	Temperature controller cum indicator with timer	1
16	Constant temperature water bath	1
17	Water analyser	1
18	Manual centrifuge machine	10
19	Mixer grinder 3 jar	1
20	Abbe refractometer	1

21	Digital balance	2
22	PotentiometerEquiptronics model 606	2
23	Water bath with 6 holes	1
24	Water bath with 12 holes	2
25	Digital conductivity meter	4
26	Water distillation unit	3
27	Magnetic stirrer Remi	6
28	Centrifuge machine	2
29	Reference electrode	4
30	Platinum electrode	4
31	Silver electrode	2
32	Digital colorimeter	4
33	Digital pH meter	1
34	Oil free vacuum pump	5
35	Vacuum gauge	5
36	Heating mantle with regulator	6
37	Digital balance	2
38	Water bath with 12 holes	4
39	Mechanical stop watch	6
40	Hair dryer	2
41	1 KVA offline UPS with 150 Exide battery	2
42	12 volt 130 AH Exide battery	1
43	Potentiometer with stirrer	5
44	Digital conductivity meter	5
45	Digital pH meter	4
46	Digital Beckmann thermometer	2
47	Digital weighing balance	2
48	Hot air oven with digital temperature controller	2
49	Digital turbidity meter	2
50	Magnetic stirrer with hot plate 1L	1
51	Magnetic stirrer with hot plate 2L	1
52	Digital Nephelometer	1
53	Reference electrode	4
54	Platinum electrode	2
55	Conductivity cell	1
56	Digital photoelectric colorimeter	2
57	Reference electrode	10
58	Platinum electrode	7
59	Conductivity cell	2
60	Copper electrode	2
61	PotentiometerEquiptronics model 606	1
62	Hot air oven	2
63	Digital weighing balance	4
64	Magnetic stirrer with hot plate	7
65	Digital conductivity meter	1
66	Electric Bunsen burner	8
67	UV Chamber	1
68	Digital pH meter	1

69	Hot air oven Infra	2
70	Water bath with 24 holes	3
71	Distilled water plant	3
72	Hot air dryer	4

### Department of Physics

P. G. Department of studies in Physics has central research facility along with the individual faculty research laboratories. Following are the instruments/equipment available for researchers.

Sl. No.	Name of Equipment	Year of Purchase
1	Steady State Spectro Fluorophotometer	2016
2	Electrochemical Workstation	2015
3	Keithley Source Meter	2011
4	Fluorescence Lifetime Imaging Microscope	2010
5	Spray Pyrolysis Unit	2012
6	Hind High Vac Thin Film Coating Unit	2008
7	Nano Second Nd; YAG laser	2006
8	Dye Laser System	2008
9	Fluorescence Spectrophotometer	2015
10	Universal Testing Machine (UTM)	2015
11	Molecular Modelling Work Station	2012
12	X- Ray Detectors (HPGe & Si (Li))	2008
13	High Precision Impedance Analyzer	2013