

B. L. D. E Association's
S. B Arts and K. C. P Science College,
Vijayapur



Department of PG Studies in Physics

SKILL BASED VALUE ADDED COURSE
FOR
THIRD SEMESTER PG STUDENTS OF PHYSICS
(For the Academic Year 2018-19)-III

Course Name: Instrumentation

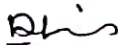
(Course Code: SBKCP/PGPHY/VAC/01)

REPORT

B. L. D. E. Association's
S. B Arts and K. C. P Science College, Vijayapur
Department of PG Studies in PHYSICS
Value Added Course 2018-2019
Course Name: Instrumentation
Course Code: SBKCP/PGPHY/VAC/01

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Co-ordinator
Department of PG Studies in Physics
S.B. Arts and KCP Science College
VIJAYAPUR


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S.B.Arts & K.C.P.Science College,
Vijayapur.


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SHRI B. M. PATIL ROAD (Solapur Road), VIJAYAPUR

ACCREDITED at 'A' Grade in 3rd Cycle by NAAC

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Web: www.bldeasbkcp.org



REF.: _____

Date: 05-Aug-2018

Department of PG Studies in Physics


Value Added Course: 2018-2019

NOTICE

This notice is to inform all M. Sc III Sem Physics students about Value Added course for the year 2018-2019. Students have to enroll their names in the departments on or before 15th of August 2018. Last date for the submission of enrollment forms is 20th of August 2018.


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S. B Arts and K. C. P Science College, Vijayapur
Department of PG Studies in PHYSICS
Value Added Course

Course Name: Instrumentation

Course Code: SBKCP/PGPHY/VAC/01

Objective: The main objective of the course is to make the students understand the Principle and Theory of instruments.

Scope: This course has wide scope and after completion of M. Sc it helps students in Research and Teaching.

Syllabus

Total Duration of Teaching: 50 Hours

Duration of Teaching per week: 02 Hours

Theory Syllabus

Total hours allotted: 30 hours

Unit:I

5hrs

Structural and composition characterization: Basics of X- ray diffraction (XRD), powder XRD, Transmission Electron Microscope (TEM), Scanning Electron Microscope (SEM), Atomic Force Microscopy (AFM), Scanning Tunneling Microscopy (STM).

Unit:II

5hrs

Optical spectroscopy and Raman Spectroscopy: Fourier Transform Infrared Spectroscopy (FTIR), UV-Vis. Spectroscopy, and Raman Spectroscopy, Raman and IR spectroscopy, structure determination by IR and Raman spectroscopy.

Unit:III

8hrs

Electric and thermal measurements: a.c and d.c electrical conductivity measurements as a function of temperature and frequencies. Magneto resistance measurements, specific heat measurements, Impedance spectroscopy: A. C. impedance spectroscopy, Thermo Gravimetric analysis (TGA), differential thermal analysis (DTA) and differential scanning calorimetric (DSC) analysis.

Unit:IV

2hrs

Nuclear Detectors: Scintillation detector- NaI(Tl) gamma ray spectrometer; Principle, working and energy resolution. Semiconductor detectors.

Text Books:

1. Physics of Atoms and Molecules: 2nd Ed., Brans den B.H. and Joachim C. J., Pearson Education, India (2006).
2. Elementary Atomic Structure (2nd ed.): G. K. Wood gate, Clarendon Press, Oxford (1980).
3. Molecular Spectra & Molecular Structure: Vol- I, Herzberg, D. VanNo strand Co. Princeton, J. J. (1945).
4. Spectroscopy – Vol. 3, S. Walker & B. P. Strauhghan, Chapman & Hall,(1976).
5. Fundamentals of Molecular Spectroscopy: C. N. Barnwell and E. M. McCash, Tata Mc Graw- Hill Co., 4th revised edition, (9th reprint, 2000)

Practical Syllabus: List of experiments

(Each practical of two hours)


1. Hall effect in metals
2. Determination of Magnetoresistance
3. Temperature Dependence of Hall Coefficient.
4. Determination of e/K_b .
5. Determination of band gap of semiconductors using Four probe Method.

Evaluation:

Students will be evaluated through the examination conducted by the physics department at the end of the course and they will be awarded course certificate accordingly.


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Department of PG Studies in PHYSICS
Value Added Course 2018-2019
Course Name: Instrumentation
Course Code: SBKCP/PGPHY/VAC/01


List of Faculty

- 1. Dr. Girija M. Nimbale**
- 2. Smt. Soumya Sajjan**


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Department of PG Studies in PHYSICS
Value Added Course 2018-2019
Course Name: Instrumentation
Course Code: SBKCP/PGPHY/VAC/01

List of Students Enrolled


M. Sc III Semester

Roll. No	Candidate's Name	Signature
1	Akshata Ashok Kudache	AAK
2	Anand Chinagundi	AC
3	Banashree Biradar	B
4	Kalavva Lakshman Badiger	KLB
5	Keshagond Vishwanath Mallikarjun	KVM
6	Laxmansingh Hajeri	LH
7	Laxmi Bellundagi	L.B
8	Mahipati Kulkarni	MK
9	Najamin Mehaboob Arab	NMA
10	Neelavati Hiremath	NH
11	Pooja Nikkam	P
12	Rahul Utagi	R.U
13	Sangamesh Honakatti	SH
14	Savalagi Shivaganga Abhaykumar	SSA
15	Seeta Vittal Kulakarni	SV
16	Sheetal Tatyasaheb Naik	ST
17	Shivanand Putagi	SP
18	Veereshkumar Wali	VW


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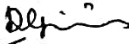

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Department of PG Studies in PHYSICS
Value Added Course 2018-2019
Course Name: Instrumentation
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Time Table

Time\Days	Friday	Saturday
02.00 pm - 04.00 pm	Practical	Practical
04.00 pm - 05.00 pm	Theory	Theory


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Value Added Course (VAC)
2018-19

B.L.D.E.

STUDENT ATTENDANCE

Sl. No.	Name	1	2	3	4	5	6	7	8	9	10	11	12	13
01	Akshata Ashok Kudache	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
02	Anand chingunli	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
03	Banashree Biradar	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
04	Katavna Lakshman Badiga	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
05	Keshagond Vishwanath.M	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
06	Laxmansingh. Hajari	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
07	Laxmi. Bellundagi	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
08	Mahipati kulkarni	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
09	Najamim Mehaboob Arab	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
10	Neeleshvi Hiremath	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
11	pooja Nikkam	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
12	Rahul Utagi	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
13	Sangamesh Honakatti	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
14	Sonalagi Shivaganga A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
15	Seeta Vittal. Kulkarni	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16	Shubal Katyasaheb Naik	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17	Shatanand Putagi	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
18	Veereshkumar Wali	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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Association's

Theory classes

REGISTER

Sl. No.	Name	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	No. of days late	No. of days Present	Date of Original Admission of the class or of promotion
01	Akshata Ashok Kudache	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
02	Anand chingunli	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
03	Banashree Biradar	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
04	Katavna Lakshman Badiga	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
05	Keshagond Vishwanath.M	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
06	Laxmansingh. Hajari	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
07	Laxmi. Bellundagi	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
08	Mahipati kulkarni	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
09	Najamim Mehaboob Arab	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
10	Neeleshvi Hiremath	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
11	pooja Nikkam	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
12	Rahul Utagi	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
13	Sangamesh Honakatti	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
14	Sonalagi Shivaganga A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
15	Seeta Vittal. Kulkarni	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
16	Shubal Katyasaheb Naik	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
17	Shatanand Putagi	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
18	Veereshkumar Wali	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			

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Value Added Course (VAC)

2018-19

B.L.D.E.

STUDENT ATTENDANCE

Association's

Practical classes

REGISTER

Sl. No.	Name	1	2	3	4	5	6	7	8	9	10	11	12	13
01	Akshata Ashok Kudach	AB	AB	AB	AB	AB	AB							
02	Anand Chingunli	⊙	⊙	⊙	⊙	⊙	⊙							
03	Banashree Biradar	⊙	⊙	⊙	⊙	⊙	⊙							
04	Kalasha Badiger	KAB	KAB	KAB	KAB	KAB	KAB							
05	Keshagoni Nishwanath	KNS	KNS	KNS	KNS	KNS	KNS							
06	Laxmansingh Hajeri	LB	LB	LB	LB	LB	LB							
07	Laxmi Bellundagi	LB	LB	LB	LB	LB	LB							
08	Mahipati Kulkarni	MKB	MKB	MKB	MKB	MKB	MKB							
09	Najam Mohabab Arab	NMA	NMA	NMA	NMA	NMA	NMA							
10	Neelavati Hirerath	NHR	NHR	NHR	NHR	NHR	NHR							
11	Pooja Nikkam	PNB	PNB	PNB	PNB	PNB	PNB							
12	Rahul Utagi	RU	RU	RU	RU	RU	RU							
13	Sangamesh Hanakatti	SH	SH	SH	SH	SH	SH							
14	Sandeep Shivaganga A	SSA	SSA	SSA	SSA	SSA	SSA							
15	Seeta Vittal Kulkarni	SK	SK	SK	SK	SK	SK							
16	Sheetal Tatyasaheb Naik	SN	SN	SN	SN	SN	SN							
17	Shivanand Autagi	SA	SA	SA	SA	SA	SA							
18	Neerajkumar Wali	NW	NW	NW	NW	NW	NW							

14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	No. of days late	No. of days Present	Date of Original Admission of the class or of promotion

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REF./ PÅæ*AiÅAPA : _____

Date /çÉÅAPA: 15/11/2018

Department of PG Studies in Physics
Value Added Course: 2018-2019

NOTICE

The Value added Course 2018-2019 theory and Practical Examinations will be conducted on the below dates. All the students attend both the exams without fail.

	Date	Time
Theory	5/12/2018	2pm to 5.00 pm
Practical	6/12/2018	2pm to 6.00 pm

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Department of PG Studies in PHYSICS
Value Added Course 2018-2019
Course Name: Instrumentation
Course Code: SBKCP/PGPHY/VAC/01

Theory Test Question Paper


Maximum Marks: 60 Marks

I. Answer any 08 questions each carrying 05 marks. (5m x 8q = 40m)

1. Explain the basic principle underlying working of SEM.
2. Explain the construction of Scanning Tunneling Microscopy (STM) with neat diagram.
3. Give the difference between SEM and TEM.
4. Describe the importance of optical spectroscopy.
5. Explain UV –Vis Spectroscopy.
6. Give the difference between IR and Raman spectroscopy.
7. What is the importance of a. c and d. c conductivity measurement?
8. Explain differential thermal analysis (DTA).
9. What are Semiconductor detectors?
10. Explain energy resolution in Scintillation detectors.

II. Answer any 02 questions each carrying 10 marks. (10m x 2q = 20m)

11. Explain construction and working of powder XRD.
12. Explain the structure determination by Raman spectroscopy.
13. Explain a. c impedance spectroscopy.
14. Explain the principle and working of Scintillation detector- NaI (TI) gamma ray spectrometer.


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Course Name: Instrumentation
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Marks List

Maximum Marks: 100

Sl. No	Candidate's Name	Theory(60)	Practical(40)	Total	Sign
1	Akshata Ashok Kudache	56	34	90	AAK
2	Anand Chinagundi	43	30	73	GA
3	Banashree Biradar	40	30	70	B
4	Kalavva Lakshman Badiger	57	38	95	KLB
5	Keshagond Vishwanath Mallikarjun	40	35	75	KVM
6	Laxmansingh Hajeri	45	33	78	LHajeri
7	Laxmi Bellundagi	41	32	73	L.B
8	Mahipati Kulkarni	40	31	71	M
9	Najamin Mehaboob Arab	45	35	80	NMA
10	Neelavati Hiremath	56	38	94	NH
11	Pooja Nikkam	55	37	92	Pooja
12	Rahul Utagi	48	34	82	RU
13	Sangamesh Honakatti	42	30	72	SH
14	Savalagi Shivaganga Abhaykumar	51	32	83	SSA
15	Seeta Vittal Kulakarni	41	31	72	SVK
16	Sheetal Tatyasaheb Naik	44	30	74	SN
17	Shivanand Putagi	50	37	87	SP
18	Veereshkumar Wali	40	31	71	VW


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Department of PG Studies in PHYSICS
Value Added Course 2018-2019
Course Name: Instrumentation
Course Code: SBKCP/PGPHY/VAC/01

Course Outcome

A value added course on Instrumentation for the year 2018-2019 was conducted in Department of PG studies in Physics for M. Sc Final year students. The course was conducted between 23rd August 2018 and 30th November 2018, under the supervision of Prof. S. B. Pattadakal, Head of Department of Physics. Dr. Girija M. Nimbale and Smt. Soumya Sajjan., Assistant Professors of the department conducted the classes.

In this course students were familiarized with the theory and the principle involved in the instruments equipped for the characterization of the materials. This is helpful for the in future for research and teaching as well.

The understanding of the students towards this course was evaluated by both theory and Practical examination. And certificates were issued at the end of the course.



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Internal Quality Assurance Cell Initiative

VALUE ADDED COURSE

Certificate



This is to certify that Mr./Ms. Kalavva L. Badiger

has Completed the Value Added Course on Instrumentation

Conducted by the Department of M.sc physics during the

Year 2018-2019

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S.B.Arts & K.C.P.Science College,
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Deviya
Head of the Department

Co-Ordinator, IQAC

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Internal Quality Assurance Cell Initiative

VALUE ADDED COURSE

Certificate



This is to certify that Mr./Ms. Keshagond Vishwanath Mallikarjun


has Completed the Value Added Course on Instrumentation

Conducted by the Department of M.sc Physics during the

Year 2018-19


Head of the Department
S.B.Arts & K.C.P.Science College,
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Internal Quality Assurance Cell Initiative

VALUE ADDED COURSE

Certificate




This is to certify that Mr./Ms. Akshata Ashok Kudache

has Completed the Value Added Course on Instrumentation

Conducted by the Department of M.Sc Physics during the

Year 2018-2019


Head of the Department


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Internal Quality Assurance Cell Initiative
VALUE ADDED COURSE



Certificate

This is to certify that Mr./Ms. Anand Chimagundi
has Completed the Value Added Course on Instrumentation
Conducted by the Department of M.sc physics during the
Year 2018-2019


IQAC, Co-ordinator
S.B.Arts & K.C.P.Science College,
Vijayapur,
Head of the Department


Co-Ordinator, IQAC


Principal,
S.B. Arts and KCP Science College,
VIJAYAPUR
Principal



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S.B. ARTS & K.C.P. SCIENCE COLLEGE, VIJAYAPUR

(Re-Accredited by NACC at 'A' Level in 3rd Cycle)

Internal Quality Assurance Cell Initiative

VALUE ADDED COURSE

Certificate



This is to certify that Mr./Ms. Banashree Biradai

has Completed the Value Added Course on Instrumentation

Conducted by the Department of M.sc physics during the

Year 2018 - 2019

Head of the Department
IQAC, Co-ordinator
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