

SANT GADGE BABA AMRAVATI UNIVERSITY GAZETTE



Official Publication of Sant Gadge Baba Amravati University

PART - TWO

गुरुवार, दिनांक १६ जून, २०१६

अधिसूचना

क्रमांक : ३३/२०१६

दिनांक : १६.०६.२०१६

विषय : २०१५-२०१६ शैक्षणिक सत्राची वीर उत्तमराव मोहिते शिष्यवृत्ती.

सर्व सामान्यांचे माहितीकरिता अधिसूचित करण्यात येते की, वीर उत्तमराव मोहिते शिष्यवृत्ती दाननिधी विनियम क्र. ३१/१९९८ मधील तरतुदीप्रमाणे, कु. माधुरी शंकर खामनकर या विद्यार्थीनीने वाङ्मय स्नातक परीक्षा प्रथम प्रयत्नात उत्तीर्ण करून या अभ्यासक्रमाच्या इतिहास विषयात सर्वाधिक गुण प्राप्त करून २०१५-२०१६ शैक्षणिक सत्रामध्ये लोकमान्य टिळक महाविद्यालय, वणी, येथे वाङ्मय पारंगत भाग - १ (इतिहास) या वर्गात प्रवेश घेतल्यामुळे, ही विद्यार्थीनी २०१५ - २०१६ या शैक्षणिक सत्राच्या रु. २,८००/- च्या वीर उत्तमराव मोहिते शिष्यवृत्तीसाठी पात्र ठरली आहे.

२०१५ - २०१६ या शैक्षणिक सत्रामध्ये रु. २,८००/- (अक्षरी रु. दोन हजार आठशे फक्त) ची वीर उत्तमराव मोहिते शिष्यवृत्ती कु. माधुरी शंकर खामनकर यांना प्रदान करण्यात येत आहे.

स्वा/-
कुलसचिव
संत गाडगे बाबा अमरावती विद्यापीठ,

अधिसूचना

(शुद्धीपत्रक)

क्रमांक :- ३४/२०१६.

दिनांक :- १६/०६/२०१६.

विषय :- परीक्षा संचालन प्रक्रियेत सहभागी असणाऱ्या केंद्राधिकारी, सहकेंद्राधिकारी, पर्यवेक्षक व इतर मदतनीस यांचे मानधन/पारिश्रमिक दराबाबत.

संदर्भ:- अधिसूचना क्र. १४४/२०१५ दिनांक १५/१०/२०१५.

अधिसूचना क्र. १४४/२०१५ दिनांक १५/१०/२०१५ मधील अ.क्र. (C) मध्ये खालील प्रमाणे शिर्ष नमुद आहे:- “The University contribution to the affiliated colleges for material used for practical in commerce, Science, Social-Science, Education, Home-Science and medicine faculties shall be mentioned in the following table:-”

यासंदर्भात सर्व संबंधितांच्या माहितीकरिता याद्वारे अधिसूचित करण्यात येते की, “The University contribution to the affiliated colleges for material used for practical in commerce, Science, Social-Science, Education, Home-Science and medicine faculties shall be mentioned in the following table:-” या शिर्षाऐवजी “The University contribution to the affiliated colleges for material used for practical in commerce, Science, Social-Science, Education, Home-Science, medicine and Engineering & Technology faculties shall be mentioned in the following table:-” असे वाचण्यात यावे.

स्वा/-
कुलसचिव
संत गाडगे बाबा अमरावती विद्यापीठ,

अधिसूचना

क्र. ३५/२०१६

दिनांक : १६/०६/२०१६

विषय : वार्षिकांक स्पर्धा २०१५-२०१६

संदर्भ : अधिसूचना क्र.६६/१९९४, दि.१७.११.१९९४

१. संत गाडगे बाबा अमरावती विद्यापीठामध्ये वर्ष १९८४-८५ पासून विद्यापीठाशी संलग्नित महाविद्यालयांनी प्रकाशित केलेल्या वार्षिकांकाची “वार्षिकांक स्पर्धा” आयोजित करण्यात येते. या स्पर्धेमध्ये सर्वोत्कृष्ट ठरणा-या तीन वार्षिकांकास गुणानुक्रमे पारितोषिके प्रदान करण्यात येतात.
२. संत गाडगे बाबा अमरावती विद्यापीठ व्यवस्थापन परिषदेच्या निर्णयानुसार वर्ष १९९३-९४ पासून महाविद्यालयीन वार्षिकांक स्पर्धेकरिता विद्यापीठाने व्यावसायिक आणि बिगर व्यावसायिक महाविद्यालये असे दोन वेगळे गट केलेले आहे. त्यानंतर व्यवस्थापन परिषद मुद्दा क्र.१६५, दि.९/७/२०१३ अन्वये या स्पर्धेतील प्रत्येक गटातील सर्वोत्कृष्ट ठरणा-या वार्षिकांकास गुणानुक्रमे प्रथम रु.१०,०००/- , द्वितीय रु.५,०००/- व तृतीय रु.३,०००/- क्रमांकाचे पारितोषिक देण्याचे मान्य केले. तसेच समितीने विजेते महाविद्यालयांना स्मृतीचिन्ह व प्रमाणपत्र देण्याचे ठरविले आहे.
३. गुणवत्ताक्रम ठरविण्याकरिता खालील निकषप्रमाणे गुणांचे विभाजन राहिल.

अ) मुखपृष्ठ(प्रतिकामकता, निराळेपणा इ.)	.....	१० गुण
ब) अंतर्गत सजावट(आकर्षकता, व्यंगचित्रे, रेखाचित्रे इ.)	.....	१० गुण
क) छपाई व बांधणी	.....	०५ गुण
ड) नाविन्य व वाचनियता	.....	१० गुण
इ) शाखा गट		
१) मराठी	.....	२२ गुण
२) हिंदी	.....	१५ गुण
३) इंग्रजी	.....	१५ गुण
४) संस्कृत	.....	०७ गुण
५) उर्दू	.....	०६ गुण
४. वार्षिकांकात वाचनीय मजकूर (विविध भाषेतील अभिरुची संपन्न साहित्य/लेख, विविध अहवाल, व्यंगचित्रे, रेखाचित्रे व मुखपृष्ठ छायाचित्रासह) कमीत कमी ५० पृष्ठ असणे आवश्यक आहे व पृष्ठ क्रमांक सलग देण्यात यावे, त्याशिवाय वार्षिकांकाचा स्पर्धेसाठी विचार करता येणार नाही.
५. वार्षिकांकात अंतर्भूत लेखाच्या शिर्षानंतर लेखक, विद्यार्थ्यांचे नाव व वर्ग स्पष्ट असावा. प्राध्यापकांचे लेख असल्यास ‘प्राध्यापक’ असे स्पष्टपणे नमुद करावे. वरिष्ठ महाविद्यालयीन विद्यार्थ्यांनी लिहीलेले लेख/साहित्य/कविता यांच्या पृष्ठांची संख्या कमीत कमी ५० पानांची असावी. कनिष्ठ महाविद्यालयातील विद्यार्थ्यांच्या लेखांची पृष्ठ संख्या स्पर्धेसाठी ग्राह्य धरण्यात येणार नाही.
६. जाहिरातीचा अंतर्भाव करू नये. अंकात जाहिरातीचा अंतर्भाव असल्यास प्रति जाहिरात दोन गुण याप्रमाणे कमी केले जातील.
७. वार्षिकांक स्पर्धा २०१५-२०१६ मध्ये सहभागी होण्यासाठी वार्षिकांकाच्या ६ प्रती कुलसचिवांचे नावे दि.३०.६.२०१६ पर्यंत विद्यापीठास पोहोचतील अशा रितीने पाठविणे आवश्यक आहे. वार्षिकांकाची संख्या ६ प्रतीपेक्षा कमी असल्यास तसेच निर्धारित मुदतीनंतर प्राप्त वार्षिकांकाचा समावेश वार्षिकांक स्पर्धेमध्ये करण्यात येणार नाही.
८. वार्षिकांक स्पर्धेकरिता वार्षिकांक(आकार एक सारखा असण्याचे दृष्टीने) 11” x 8 1/2” आकाराचे असावे.
९. प्रत्येक महाविद्यालयाने स्पर्धेमध्ये सहभागी होणे अनिवार्य राहिल.
१०. स्पर्धेसाठी परीक्षक समितीचा निर्णय अंतीम राहिल.

स्वा/-

कुलसचिव

संत गाडगे बाबा अमरावती विद्यापीठ,

NOTIFICATION

No. : 36. / 2016

Date : 16/06/2016

**Subject : Continuation of Prospectus of various Examinations in the
Faculty of Home Science, for the Session 2016-17**

It is notified for general information of all concerned that the syllabi prescribed for the session 2015-2016 for the various Examinations in the Faculty of Home Science as mentioned in column No. 2 of the following table, bearing Nos. as mentioned in column No. 3 of the said table shall continue for the session/semester/examination, as it is or with changes notified vide notification numbers / Direction Nos. as mentioned under column No. 4 of the said table.

TABLE

Sr. No.	Name of Examination	Prospectus No.	Continued for Session/ Semester/Examination (As it is / along with Notification No./ Direction No.)
1	2	3	4
1	B.Sc. (Home Science) Sem-I & II	2012191	Semester-I-Winter-2016; Semester-II-Summer-2017 (As it is)
2	B.Sc. (Home Science) Sem-III & IV	2012192	Semester-III-Winter-2015; Semester-IV-Summer-2017 (As it is)
3	B.Sc. (Home Science) Sem-V & VI	2013193	Semester-V-Winter-2016; Semester-VI-Summer-2017 (As it is)
4	M.Sc. (Home Science) Sem-I to IV (Resource Management)	2016194	Semester-I & III-Winter-2016; Semester-II & IV-Summer-2017 (As it is)
5	M.Sc. (Home Science) Sem-I to IV (Textile and Clothing)	2012195	Semester-I & III-Winter-2016; Semester-II & IV-Summer-2017 (As it is)
6	M.Sc. (Home Science) Sem-I to IV (Human Development)	2016196	Semester-I & III-Winter-2016; Semester-II & IV-Summer-2017 (As it is)
7	M.Sc. (Home Science) Sem-I to IV (Communication and Extension)	2012197	Semester-I & III-Winter-2016; Semester-II & IV-Summer-2017 (As it is)
8	M.Sc. (Home Science) Sem-I to IV (Food Science and Nutrition)	2015199	Semester-I & III-Winter-2016; Semester-II & IV-Summer-2017 (As it is)
9	M. Phil. (Home Science)	10198	Summer-2017 (As it is)
10	Cert.Courses in P.G.Deptt. of the Uni.	2008/Cert/ 1-14	Cert. course exams. for the Session 2016-17 (As it is)
11	B.Tech. Sem-I & II (Cosmetics)	20131910	Semester-I-Winter-2016; Semester-II-Summer-2017 (As it is)
12	B.Tech. Sem-III & IV (Cosmetics)	20141911	Semester-III-Winter-2016; Semester-IV-Summer-2017 (As it is)
13	B.Tech. Sem-V & VI (Cosmetics)	20151912	Semester-V-Winter-2016; Semester-VI-Summer-2017 (As it is)
14	B.Tech. Sem-VII & VIII (Cosmetics)	20161913	Semester-V-Winter-2016; Semester-VI-Summer-2017 (As it is)
15	M.Tech. (Cos. Tech.) Sem-I to IV	20131914	Semester-I & III-Winter-2016; Semester-II & IV -Summer-2017 (As it is)
16	M.Tech. (Qua. Ass.) Sem-I to IV	20131915	Semester-I & III-Winter-2016; Semester-II & IV -Summer-2017 (As it is)
17	M.Tech. (Per. & Colours) Sem-I to IV	20131916	Semester-I & III-Winter-2016; Semester-II & IV -Summer-2017 (As it is)
18	M.Tech. (Her.Cos.) Sem-I to IV	20131917	Semester-I & III-Winter-2016; Semester-II & IV -Summer-2017 (As it is)
19	P.G.Diploma in Event Management (Sem-I & II)	20121918	Semester-I & III-Winter-2016; Semester-II & IV -Summer-2017 (As it is)
20	B.Sc. (Home Science) (Fashion Designing)	20121919	Semester-I, III & V Winter-2016; Semester-II, IV & VI Summer-2017 (As it is)

Sd/-

Registrar

Sant Gadge Baba Amravati University

NOTIFICATION

No. : 37 / 2016

Date: 16/06/2016

Subject : I) Continuation of Prospectus No.2015122 prescribed for B.Sc.Part-II for the Session 2016-17.
II) Introduction of new Syllabi for the subject Forensic Science, Renewable Energy & Animation at B.Sc. Part-II from the session 2016-17.

- I) It is notified for general information of all concerned that the Prospectus of B.Sc.Part-II (Sem-III & IV) bearing No.2015122 prescribed for the Academic Session 2015-16 shall continue for the session 2016-17 along with the following substitutions/additions.
“The syllabi of B.Sc.Part-II Sem-III ‘3S Mathematics, Paper V & Paper VI’ printed on page Nos.1 to 3 and B.Sc.Part-II Sem-IV ‘4S Mathematics, Paper VII & Paper VIII’ printed page Nos. 3 to 5 be substituted by the **Appendix-A** appended with this Notification.”
- II) It is further notified for general information of all concerned that the authorities of the University have introduced the new subject **i) Forensic Science, ii) Renewable Energy, & iii) Animation**, at B.Sc. Part-II (Sem-III & IV) from the session 2016-17 as –
- i) “3S Forensic Science (Forensic Physics)” and “4S Forensic Science (Forensic Biology)” as given in Appendix-B,**
 - ii) “3S Renewable Energy (Bio Energy and Wind Energy)” and “4S Renewable Energy (Solar Thermal, Geothermal, Ocean)” as given in Appendix-C,**
 - iii) “3S Animation (Basics of Web Designing)” and “4S Animation (2D Animation)” as given in Appendix-D** appended with the notification.

Sd/-
Registrar
Sant Gadge Baba Amravati University

Appendix – A

Syllabus Prescribed for B.Sc. II (Semester-III & IV) Examination to be implemented from the Academic Session 2016-17
Semester III
3S Mathematics Paper- V
(Advanced Calculus)

- Unit I** : Sequence: Definition of sequence, uniqueness of limit of sequence, algebra of limit of a sequence, positivity theorem, sandwich theorem, monotonic and bounded sequence, Cauchy sequence.
- Unit II** : Series: Series of nonnegative terms, convergence of geometric series and the series $\sum \frac{1}{n^p}$
Comparison tests, Cauchy’s integral test, ratio test, root test, absolute convergent, conditional convergent, Leibnitz rule, Abel’s test, Dirichlet test.
- Unit III** : Limit and continuity of functions of two variables, algebra of limit and continuity, intermediate value property, fixed point property, Taylor’s theorem for function of two variables.
- Unit IV** : Maxima and minima of two variables, Lagrange’s multipliers method, Jacobians.
- Unit V** : Double integral (definition and evaluation technique), change of order of double integral, triple integral, Gauss and Stoke’s theorem.

Reference Books :

- 1) Gorakh Prasad : Differential Calculus, Pothishala Pvt. Ltd., Allahabad.
- 2) Gorakh Prasad : Integral Calculus, Pothishala Pvt. Ltd., Allahabad.
- 3) Murray R. Spiegel : Theory and Problems of Advanced Calculus, Schaum Outline Series.
- 4) S. C. Malik and Arora : Mathematical Analysis, Wiley Eastern Ltd., New Delhi.
- 5) O. E. Stanaitis : An Introduction to Sequences, Series and improper Integrals, Holden-Dey, Inc. San Francisco, California.
- 6) T. M. Karade, J. N. Salunke, A. G. Deshmukh, M. S. Bendre: Lectures on Advanced Calculus, Sonu-Nilu Publication, Nagpur.
- 7) Earl D. Rainville : Infinite series, The Macmillan Co., New York.
- 8) N. Piskunov : Differential and Integral Calculus, Peace publishers, Noscov.
- 9) Shanti Narayan : A Course of Mathematical Analysis, S. Chand & Co., New Delhi.
- 10) D. Somasundaram and B. Choudhary: A First course in Mathematical Analysis, Narosa Publ. House.

Semester III
3S Mathematics Paper -VI
(Elementary Number Theory)

- Unit I** : Divisibility, division algorithm, the greatest common divisor, greatest common divisor of more than two integers, Euclidean algorithm, least common multiple.
- Unit II** : Prime numbers, the fundamental theorem of arithmetic or unique factorization theorem, Fermat numbers, linear Diophantine equation.
- Unit III** : Congruence, properties of congruence, special divisibility test, linear congruences, Chinese remainder theorem.
- Unit IV** : Arithmetic functions, Euler's theorem, the τ and σ functions, Mobius μ function.
- Unit V** : Primitive roots, primitive roots for prime, polynomial congruences, The congruence $x^2 \equiv a \pmod{p}$, general quadratic congruence, quadratic residues.

Reference Books:

1. D. M. Burton: Elementary Number Theory, Universal Book Stall, New Delhi, Second Edition 2003.
2. C.Y. Hsiung: Elementary Theory of Numbers, Allied Publishers Ltd.1992.
3. I. Niven, H. S. Zuckerman and H. L. Montgomery: An introduction to the Theory of Numbers, Wiley Student Edition, Fifth edition 2004.
4. K. H. Rosen: Elementary Number Theory and its Applications, Addison-Wesley, 1986.
5. T. M. Karade, J. N. Salunke, K. D. Thengane, M. S. Bendre: Lectures on Elementary Number Theory, Sonu-Nilu publication 2005.
6. K. Ireland and M. Rosen: A Classical Introduction to Modern Number Theory, GTM Volume 84, Springer-Verlag 1972
7. G. A. Jones and I. M. Jones: Elementary Number Theory, Springer, 1998
8. W. Sierpinski: Elementary Theory of Number, North-Holland, 1988, Ireland.
9. K. Rosen and M. Rosen: A Classical Introduction to Modern Number Theory, GTM Volume 94, Springer-Verlag, 1972.

Semester IV
4S Mathematics Paper-VII
(Modern Algebra: groups and rings)

- Unit I** : Group: Definition of a group with examples, properties of a group, subgroups, cyclic groups, order of a generator of a cyclic group, permutation groups even and odd permutations.
- Unit II** : Cosets and normal subgroups: Cosets, Lagrange's theorem, normal subgroups, different characterization of normal subgroups, algebra of normal subgroups, quotient group.
- Unit III** : Homomorphism and isomorphism: Homomorphism, homomorphic image, kernel of homomorphism, isomorphism of a group, Fundamental theorem on homomorphism of a group, natural homomorphism, second isomorphism theorem, third isomorphism theorem.
- Unit IV** : Ring, integral domain and field: Definition, examples, properties of a ring (commutative ring, ring with unity, zero divisor, without zero divisor), subring, characterization of ring, integral domain, field, subfield and prime field.
- Unit V** : Ideal: Definition, left ideal, right ideal, examples, algebra of ideals, prime ideal, maximal ideal, principle ideal, quotient ring, ring homomorphism.

Reference Books:

1. I.N. Herstein: Topics in Algebra, Wiley Eastern Ltd., New Delhi,1975.
2. N. Jacobson : Basic Algebra ,Vol. I and II W.H.Freeman,1980(Hindustan Publishing Co.
3. Shanti Narayan :A Text Book Of Modern Abstract Algebra, S. Chand and Co. ,New Delhi
4. K.B.Datta: Matrix and Linear Algebra, Prentice Hall of India Pvt.Ltd.New Delhi,2000
5. P.B.Bhattacharya, S.K.Jain and S.R.Nagpal : Basic Abstract Algebra (IInd Edition) Cambridge University Press Indian Edition,1997
6. K.Hoffman and R.Kunze :Linear Algebra ,II nd Edition Prentice Hall, Englewood Cliffs, New Jersey,1971.
7. S.K.Jain, A Gunawardhana and P.B.Bhattacharya : Basic Linear algebra with MATLAB, Key College Publishing (Springer-Verlag)2001
8. S. Kumaresan : Linear Algebra, A Geometric Approach, P Prentice Hall of India Pvt. Ltd. New Delhi,2000
9. Vivek Sahai and Vikas Bisht :Algebra, Narosa Publishing House ,1997.
10. D.S.Malik, J.N.Mordeson and M.K.Sen :Fundamentals of Abstract Algebra ,McGraw Hill International Edition 1997
11. T.M.Karade, J.N.Salunke, K.S.Adhav, S.D.Katore, Rekha Rani :Modern Algebra (group-rings).Sonu- Nilu Publication.Nagpur (Ist Publication),2014.

Semester IV
4S Mathematics Paper-VIII
(Classical Mechanics)

- Unit I** : Constraints, generalized coordinates, D'Alembert's principle and Lagrange's equations of motion.
Unit II : Central force motion: Areal velocity, equivalent one body problem, central orbit, Virial theorem, Kepler's laws of motion.
Unit III : Calculus of variation: functional, extremals, Euler's differential equation, Brachistochrone problem, invariance of Euler's equation, Euler-Poisson equations for a functional dependent on higher derivatives, Euler-Ostrogradsky equations.
Unit IV : Hamilton's principle, Lagrange's equations for non-holonomic system, Routh's procedure, least action principle.
Unit V : Rigid body, generalized co-ordinates of a rigid body, Eulerian angles, Euler's theorem, finite rotations, infinitesimal rotations.

Reference Books :

1. A. S. Gupta : Calculus of Variations with Applications, Prentice-Hall of India, 1997.
2. I. M. Gelfand and S. V. Fomin : Calculus of Variations, Prentice-Hill Englewood Cliffs (New Jersey), 1963.
3. H. Goldstein: Classical Mechanics (2nd edition) Narosa publishing house, New Delhi, 1998.
4. D. A. Wells: Lagrangian Dynamics, McGraw Hill, 1967.
5. T.M.Karade, Maya S. Bendre: Lectures on Classical mechanics, Einstein Foundation International, 2001
6. J. L. Synge, B.A. Griffith: Principles of Mechanics, McGraw Hill, 1959.
7. M. R. Spiegel: Theoretical Mechanics, McGraw Hill, 1983.
8. L.D. Landau, E. M. Lifschitz: Mechanics, Pergamon Press, 1976.
9. B. R. Gossick: Hamilton's Principle and Physical Systems, Academic Press, 1967.
10. S. L. Loney : An Elementary Treatise on the Dynamics of a particle and of rigid bodies, Cambridge University Press, 1956.
11. P. K. Mittal: Mathematics for Degree Students, S. Chand & Co Ltd, New Delhi, 2011.

Appendix-B

Syllabus of B.Sc. Part-II (Semester-III & IV) (Forensic Science) (Effective from session 2016-17)
3S Forensic Science (Forensic Physics)

The examination in Forensic Science of Third semester shall comprise of one theory paper, internal assessment and practical examination. Theory paper will be of 3 Hrs. duration and carry 80 marks. The internal assessment will carry 20 marks. The practical examination will be of 4 to 6 hours duration and carry 50 marks.

The following syllabus is prescribed on the basis of six lectures per week and 6 practical periods per batch per week. Each theory paper has been divided into 6 units. There shall be one question in every unit with internal choice for each of 12 marks & one compulsory question covering all the syllabus of Semester-III (8 marks).

B.Sc. Part- II (Semester- III)
3S Forensic Science (Forensic Physics)

Total Lectures: 84

Marks: 80

Note: Figures to the right hand side indicate number of lectures.

- Unit I : Laser and Fiber Optics** **14L**
Introduction, Production of LASER, Types of LASER, Properties and applications of LASER, Optical fibers, Propagation of light through optical fibers, angle of acceptance and numerical aperture, losses, Solar cells.
- Unit II : Radio Activity** **14L**
Introduction, Review of nuclear composition, nuclear properties and half life, Radioactive decay scheme, Applications of radio isotopes, Radiometric dating.
- Unit III : Ballistics** **14L**
Introduction, types of ballistic, internal, external and terminal ballistics, velocity recoil, theory of recoil, barrel pressure measurement, ballistics coefficient, angle of elevation of the barrel.
- Unit IV : Experimental techniques** **14L**
Forensic Photography, introduction, 35mm film/digital SLR camera, Digital photo imaging, ISO number, Exposure index, photo imaging evidences, angle, scale, depth of field, light, ambient light, colour temperature, flash/strobe. Crime scene investigation report writing. Magnetic Measurement and FET characteristics, Radiation Detection, Geiger Muelier counter, optical fiber communication system, Piezoelectricity and piezoelectric measurements.

- Unit V : Exterior Ballistics** **14L**
 Introduction, General consideration, Parabolic trajectory of a bullets, Vacuum trajectory and calculation of remaining velocity, Air resistance, Bullet drop, Wind deflection, Gyroscopic drift, Twist versus stability, Canting, shooting up/down, velocity of falling shot and falling bullet, Escape velocity, Maximum horizontal and vertical range of shot pellets. Ricochet: Critical angle for ricochet for the bullet and the surface, Relationship between the angle of incidence and ricochet. Stability in flight after ricochets, Lethal effects of ricochet bullet.
- Unit VI : Forensic Microscopy** **14L**
 Introduction, Basics of microscope, compound microscope- parts and properties, comparison microscope, Stereomicroscope, Polarizing microscope- polarization and applications, Micro spectrophotometer. Scanning Electron Microscope (SEM). Transmission Electron Microscope (TEM).

Semester- III
3S Forensic Science (Forensic Physics)

Total Laboratory sessions: 21 **Marks: 50**

List of Practicals

1. Laser Parameter
2. Combination of lenses
3. Determination of angle of prism A
4. Newton's rings
5. Study of absorption coefficient of given sample
6. Bridge rectifier (to study load regulation)
7. Measurement of Hall voltage
8. FET characteristics
9. Determination of density of given sample (gravimetric analysis)
10. Determination of resistivity of four probe method
11. Simulation of Bullet trajectory
12. Frequency of AC mains
13. Thermal analysis of given sample using DSC/TGA
14. Working with compound microscope and working with comparison microscope
15. Measurement of recoil (sample Calculation) and determination of remaining velocity
16. Classification and measurements of bullets

Distribution of Marks for Practical Examination.

Time: 4 – 6 hours	Marks: 50
Exercise- I	..... 12
Exercise- II	..... 12
Exercise- III	..... 12
Viva-Voce	..... 07
Record	..... 07

	Total: 50

Books Recommended:

1. Principle of Electronic by V.K. Gupta.
2. Digital Electronics by Malnino.
3. Engineering Physics by Gaur and Gupta.
4. Handbook of Firearms and Ballistics Examination and Interpreting Forensic Evidence by Brain J Heard, 2nd Ed. Publication: Wiley-Blackwell.
5. Op-Amp and liner Integrated circuits by Ramankat Gayakwad.
6. Electronics Communication systems: by Kennedy & Davis.
7. Forensic Ballistics in Criminal Justice: Kaushalendra Kumar.
8. Firearms in Criminal Investigation and Trials: B. R. Sharma, 4th Edition, Universal Law, Publishing Company. New Delhi.
9. Handbook of Firearms and Ballistics, Examining and Interpreting Forensic Evidence: Brain J. Heard, John Wiley & Sons.
10. Advanced Practical Physics, Vol.II: Dr. S.P.Singh, Pragati Prakashan, Meerut.
11. Practical Physics: Worsnoff and Flint.

B. Sc. Part II (Semester IV) (Forensic Science)
4S Forensic Science (Forensic Biology)

Total Lectures: 84 **Marks: 80**

Note: Figures to the right hand side indicate number of lectures.

- Unit I :** **14L**
A) Cell Biology, Organic and Biochemical Compounds **(7L)**
 Cell theory, Cell Structure and Function in Prokaryotes and Eukaryotes. Composition of blood, study of blood components and its functions and body fluid analysis.

	B) Human Physiology and Anatomy	(7L)
	Skeletal Muscle physiology and Nervous system Physiology, coordination systems, brain functions and receptor organs. Mechanism of blood circulation, cardiac mechanism.	
Unit II	:	14L
	A) Crime Scene Investigation	(6L)
	Protection of Biological Evidences, Documentation, Chain of Custody, Recognition of Biological evidences encountered in various cases.	
	B) Understanding Bioterrorism	(8L)
	Types of biological agents – Category A, B, C. Planning and response to bioterrorism – Preparedness, Biosurveillance, Biodefence. Epidemiology of Bioterrorism, Punishments for Bioterrorism act Under Prevention of Terrorism Act, 2002.	
Unit III	:	14L
	A) Microbiology and Biotechnology	(7L)
	Microscopy - Principles and types Recombinant DNA technology and its application in Health and Diseases, Western and Southern Blot techniques.	
	B) Analysis of Biological Fluid	(7L)
	Saliva Semen Vaginal Fluid Urine Serological Techniques Identification of Blood. Blood Grouping – Human & Non-human. Human & Animal Hair morphology.	
Unit IV	:	14L
	A) Structural & definitive properties of Chromosomes	(6L)
	Human Genome, Sources of DNA evidence, Method of DNA extraction, DNA databasing, Forensic Anthropology: Skeletal system & bone formation, Skeletal indicators of health & injuries, Identification of joint wear & deterioration, Estimation of Age, Sex & Race, Estimation of Time Since Death, Human V/s Animal Bone morphology, Facial Reconstruction, Forensic Odontology: Development of Dental structure, Estimation of Age, Sex & Race, Bitemark Analysis, Forensic Pathology: Decomposition – Muscular Physiology, Causes of Death – Asphyxia, drowning, etc. Time of Death, Post Mortem Examination – wounds, injuries, etc.	
	B) DNA Profiling and Its Forensic Significance	(8L)
	History of DNA fingerprinting, Human genetics – Heredity, Alleles, Mutations & Population Genetic, Molecular Biology of DNA. Forensic Application of recombinant DNA technology/ Forensic Biotechnology, Human Genome Project, Variations, Polymorphism in DNA system – DNA markers RELP, RAPD, VNTRs, SNP, Autosomal – STR, Y-STR, Mitochondrial DNA. Forensic Significance of DNA Profiling- Application in disputed paternity cases, child swapping.	
Unit V	:	14L
	A) Forensic Entomology:	(5L)
	Basic Principle of Insect Biology, Life Cycle, Estimation of Time of Death, Preservation of Sample.	
	B) Forensic Botany:	(9L)
	Identification of Plant specimen, Analysis of pollen & aquatic microorganisms, Techniques for dating specimens using plant material, Dendrochronology, Algal colonisation, Application of plant ecology. Study of spore, powdered minerals and pollens of forensic importance, Use of pollen grains & spores in criminal or civil investigation, Applications of Forensic Palynology.	
Unit VI	:	14L
	Forensic Serology	
	A) Determination of human and animal origin from bones, hairs, nails, skin, body tissue, fluids /strains. Genetics of ABO, Rh, Mn systems, stains and other fluids / stains.	
	B) Identification of wild life materials such as skin, fur, bones, nails, horn, teeth, flowers and plants by conventional and modern methods. Identification of Pug marks of various animals census of wild life population. Crime Scenes, Confiscated Bird Goods, Anthropological Arte facts.	

Semester- IV

4S Forensic Science (Forensic Biology)

Total Laboratory sessions: 21

Marks: 50

List of Practicals

1. Antigen-antibody reaction (blood groupings)
2. Microscopic Comparison of a) Animal Hair b) Human Hair
3. Presumptive Tests for Blood
 - a. Phenolphthalin
 - b. Benzidine
 - c. Leucomalachite Green (LMG)
 - d. Luminol
4. Confirmatory Tests for Blood by Crystallization Assays

5. Species Identification from various biological fluids
 - a. Electrophoresis
 - b. Precipitin tests
 - c. Acid Phosphatase test for semen
 - d. Prostate Specific Antigen (PSA)
6. Microscopic examination for spermatozoa
7. DNA Extraction & Quantification by colorimetric methods.
8. Microscopic examination of Pollens and Aquatic microorganisms.
9. Extraction and isolation of DNA from blood.
10. Blood grouping from stains of blood, semen, saliva and other body fluids by Absorption inhibition, Absorption-elution and mixed agglutination technique, determination of secretor/ non-secretor status.
11. Preparation of permanent slides by using maceration technique of various forensic material of Plant origin.
12. Determination of age from skull sutures.
13. Determination of age from Teeth.
14. Determination of sex from skull.
15. To identify blood stains.
16. To identify saliva stains.
17. To determines species of origin from blood.
18. Examination of hair of different animals such as Dogs, Cats, Cow, Horse, Goats etc.
19. Determination of in milk and milk products.

Distribution of Marks for Practical Examination.

Time: 4 – 6 hours

Marks: 50

Exercise- I	.....	12
Exercise- II	.....	12
Exercise- III	.....	12
Viva-Voce	.....	07
Record	.....	07

Total: 50

Books Recommended:

1. Principles of Biochemistry by Lehninger.
2. Biological Spectroscopy by Lalcowicz.
3. General Microbiology by Powar- Daginawala.
4. Cell Biology by Powar.
5. Principles of genetics by Gardner.
6. DNA Cloning by Glover.
7. Forensic Biology – Richard Li.
8. Practical Skills in Forensic Science – Alan Langford, John Dean et al.
9. Fundamentals of Forensic DNA Typing – John M. Butler.
10. Scientific & Legal Applications of Bloodstain Pattern Interpretation – Stuart H. James.
11. Forensic Science in criminal investigation and trials – B.R. Sharma.
12. Forensic Science in Crime Investigation – Dr. Mrs. Rukmani Krishnamurthy.
13. Forensic Science – An introduction to scientific and investigative techniques – Stuart H. James & Jon J. Nordby.
14. Forensic Medicine – P.V. Guharaj & M. R. Chandran.
15. The Forensic Laboratory Handbook Procedures and Practice By Ashraf Mozayani, Carla Noziglia. 2nd edition. 2011. Human Press.
16. Forensic entomology: an introduction By Dorothy E. Gennard Wiley.
17. Forensic palynology Dallas Mildenhall, Patricia Wiltshire, Vaughn Bryant Elsevier, 2006.

Appendix-C

**Syllabus Prescribed for B.Sc.-II (Sem-III & IV) to be implemented from the
Academic Session 2016-17**

3S : Renewable Energy

BIO ENERGY AND WIND ENERGY

UNIT I : Waste materials to energy conversion

Definition of solid waste, Sources, Types & composition of solid waste, Properties of solid waste; Physical, Chemical and Biological Properties; Waste treatment and disposal size reduction, aerobic Composition; Composition of Industrial Solid Waste; Biodegradable and non Biodegradable Hazardous; Methods of Detoxification.

UNIT II : Basics in Biomass Study and Bio-gas plants

Biomass- Types and its advantages and drawbacks; Biomass as a fuel; Characteristics and conversion mechanism; Microbial systems, Phases in biomass production; Production of gaseous fuels from Biomass;

Production of liquid fuels from Biomass;

i) Pyrolysis to produce Bio-oil, ii) Synthesizing liquid fuel, iii) Fermentation to produce ethanol
iv) Vegetables oils to biodiesel.

Biogas Plant: Types, Design, Constructional Details and Comparison; Factors Affecting the Design.

UNIT III : Methods for maintaining bio-gas production and management of Biogas Plant :

Insulating the Gas Plant; Composting; Use of Chemicals; Management of Biogas Plants; Biogas Appliances.

Atmospheric emissions : i) Carbon dioxide , ii) Methane,

Economic aspects of Biogas : i) Energy Prices, ii) Costing Bio-energy, iii) Electricity from wastes, iv) Future Prospects

UNIT IV : Basics of Wind and Wind measurement techniques :

Introduction, Cause of wind, Types of Winds, Monsoon winds: Summer, Winter, Local; Meteorology of Wind: Global Circulation; Power in the Wind; Measurement & Instrumentation.

UNIT V : Wind Resource Assessment :

Atmospheric boundary layer and atmospheric stability; Wind Power Conversion; Wind Power Estimation; Anemometric Wind Data: Wind Speed, Wind Direction; Site Topography; Altitude; Environmental Aspects, Wind Condition(Wind Speed and Direction)

UNIT VI : Aerodynamics and Wind mill blade

Theory of aerodynamics; Basic Equation: Continuity, Momentum and Energy Equation; Blade Element Theory and Aerofoil, Aerofoil Nomenclature and Characteristics; Wind Mill; Basic Components of Wind Mill Conversion System.

Types of Wind Mills – Based On: i) Application, ii) Wind Flow Direction, iii) Tower Type and Height, iv) Rotor, v) Number and Types of Blades, vi) Speed, vii) Wind Turbine Types and Terminology

Reference Books :

- 1) Renewable Energy – Godfrey Boyle, Oxford University Press in association with the Open University.
- 2) Non Conventional Energy Sources – G.D.Rai, Khanna Publishers, New Delhi.

LIST OF PRACTICAL :-

1. Study of Chula and Gas Stove.
2. Study of Proto type of Biogas Plant.
3. Report on Visit to Biogas Plant.
4. Report on Visit to Wind Power Generation Plant.
5. Wind Power and Annual Energy estimation from wind data.
6. Energy content in wind (Prototype Wind Mill of 500W)
7. Study of Horizontal Axis wind turbine.
8. Study of Vertical Axis wind turbine.
9. Performance of Gassifire.
10. Study and compare various heat exchangers.

**4S : Renewable Energy
Solar Thermal, Geothermal and Ocean**

Unit I : Sun as source of energy: Solar radiation, Estimation of radiation, effect of orientation of receiving surface, angle of latitude, declination angle, hour angle, inclination angle(altitude), Zenith Angle, Solara Azimuth angle, tilt angle, surface azimuth angle, angle of incidence.

Solar radiation data , estimation of monthly average, daily total radiation on horizontal surface, , estimation of monthly average, daily diffuse radiation on horizontal surface, , estimation of monthly average, daily global radiation on horizontal surface,
Measurement of solar radiation (Pyranometer, pyrhelimeter, sunshine recorder).

Unit II : Solar Energy Collectors:- Principles - Conversion of solar radiation into heat-Flat-plate Collectors- Transmissivity of cover system-Energy balance equation efficiency-Thermal analysis of Flat-plate - Concentrating Collector : Focusing Type-Merits and demerits of concentrating collectors, Types of Collectors- Focusing type- Flat Plate-Selective absorber coatings.

Solar Energy Storage Systems – Storage of solar energy – need; sensible heat storage – water storage, packed bed exchanger; latent heat storage, materials, properties of storage materials; solar pond, thermo - chemical storage. selection of method of storage.

- Unit III** : Solar energy applications–I- solar water heating, heat exchangers; concentrating collectors - paraboloid, cylindrical; construction and working, performance analysis, orientation and tracking; space heating and cooling, performance analysis; construction and working of box type cooker.
- Unit IV** : Solar energy applications–II- industrial hot water system, low pressure steam generation, solar distillation, solar drying; Community cooking, furnace, power generation, ocean thermal energy conversion, principle of working and efficiency, variation of temperature with ocean depth.
- Unit V** : Geothermal energy sources, nature of geothermal fields, binary fluid, geothermal power system, prime movers of geothermal energy conversion, advantages and disadvantages, applications of geothermal energy.
Direct heat utilization of geothermal resources, geothermal heat pumps, geochemical and geophysical methods in geothermal exploration, geothermal energy sources in India.
- Unit VI** : Energy from tides- basic principle, tidal power plant components, utilization of tidal energy, single basin tidal system, site requirements, storage, advantages and limitations of tidal power, prospects of tidal energy in India.
Ocean waves- energy and power from wave, wave energy conversion devices, advantages and disadvantages of wave energy.

LIST OF PRACTICAL :- A student should perform at least seven experiments from the following list. In examination he will be asked to perform any one experiment.

1. Use of Pyrheliometer for measurement of direct radiation.
2. Use of a pyranometer for measurement of global & diffuse radiation.
3. Use of a sunshine recorder for measurement of sunshine hours.
4. Study of thermal efficiency of liquid using flat plate collector.
5. Study of paraboloid collector.
6. Study of cylindrical collector.
7. Study of a solar absorption refrigerating system.
8. Study of a solar dryer.
9. Study of box type solar cooker.
10. Study of polar plots of solar panel.
11. To determine specific heat of water.
12. To determine Stefan's constant.

BOOKS RECOMMENDED :-

1. Energy Conversion Systems - H.A.Sarensen.
2. Solar Engg. of Thermal Processes - Daffic and Beckman.
3. Treatise on Solar Energy - Garg.
4. Principles of Solar Energy - Kreith Kreider.
5. Solar Energy - S.P.Sukhatme, Tata Mc Graw Hill..
6. Renewable Energy - BentSarensen.
7. Power plant Engg. - M.M.El. Wakil.
8. Renewable energy sources and conversion technology, Bansal Keemann, Meliss ;Tata Mc Graw Hill.
9. Renewable energy resources and emerging technologies, Kothari D.P.; Prentice Hall of India Pvt. Ltd.
10. Non-Conventional energy Sources, Rai G.D, Khanna Publishers.
11. Nonconventional Energy, Ashok V. Desai, New Age International Publishers Ltd.

Appendix-D

Syllabus Prescribed for B.Sc.-II (Sem-III & IV)

Semester III

3S : Animation

Basics of Web Designing

- Unit-I** : Fundamentals of internet & www, understanding various protocols available across the www, types of browsers, understanding the use of browsers and their peculiarity in internet surfing, finding source code their processing , etc. (brief idea and simple explanation only).
- Unit-II** : Introduction to **HTML**, simple programs in **HTML**, use of different tags, working with web layouts, digital media applications like images, their processing, etc. (lot of practice is expected for these practical applications)
- Unit-III** : Introduction to **DHTML**, brief idea of JavaScript, asp.net, php, working with dynamic features like CGI-Perl, ColdFusion, Brief idea of database, form validation, form handling, etc. introduction to system, data management (Brief idea only, no descriptive part).

Unit-IV : **Adobe Photoshop** related to Web, working with layers and layer pallets, filter effects, creating and viewing slices, slice options, image mapping (Image Ready), Simple rollovers and animations, collage, logical posters, etc. (basic concepts with simple explanation only).

Unit-V : **Dreamweaver:** introduction, www concepts, creation web sites and web pages, using all types of HTML facilities in Dreamweaver, concept of URL and links, designing a basic skeleton web site. Common objects, assets, layers and animation, behaviors, commands, snippets, designing and applications of CSS.

Unit-VI : Working with background & textures creation, using these graphics in web pages. Designing of simple CSS applications of CSS, uploading or publishing the website, (lot of practice is expected for these practical applications).

Practicals : Minimum eight experiments based on above contents are to be performed.

Recommended Books :

1. Recommended Text Book: HTML: Comprehensive concepts and techniques by Gary B. Shelly, Denise M. Woods; Published by Cengage Learning Inc., 2009.
2. Reference books: Html 4.0 Fundamentals: Creating Hypertext Web Pages by Curt Robbins; Published by DDC Publishing, 2009.
3. HTML by example by Ann Navarro, Todd Stauffer, 1999.
4. Introduction to Web Designing by B.S. Vidyasagar, Published by Datt Prakashan Akola, 2010

The Concerning teachers are also suggested to use other relevant material available on the net, to update the knowledge of the students...

Following are the recommended links, for further search-

- 1) www.tatamcgrawhill.com
- 2) www.books.google.co.in
- 3) www.penguinbooksindia.com
- 4) www.bookcafe.in
- 5) www.newindianbooks.com
- 6) www.newasiabooks.org

Semester IV
4S : Animation
2D Animation

Unit-I : **Adobe Flash:** interface explanation, document properties, tools with options of Flash, working with panels like color mixer, align. Transform, info. Etc. (detailed explanation with practical approach is expected).

Unit-II : Working with timeline, frames, key frames and layers, creating a walk-cycle, working with symbols and library, working different types of animations, creating an intro or story.

Unit-III : Working with audio and video, adding sound to a document, use of sound editing control, ADPCM compression of sound, MP3 compression, raw compression, etc.

Unit-IV : Publishing and exporting, export image with for all types of formats like png, gif, jpeg, etc; selecting the templates for different requirement like Flash HTTPS, ALCC tracking, FS command, name anchors, SCORM tracking, etc.

Unit-V : Embed a Quick Time movie in an HTML document, match movie, pixel dimensions, percentage value.

Unit-VI : Exploring actions, creating an introduction with interactivity, variables, expressions, operators and constants, creating a quiz, exploring actions and working loops, exploring objects and sound objects, etc.

Practicals : Minimum eight experiments based on above contents are to be performed.

Recommended Books :

1. Recommended Text Book: Adobe CS3 Professional Bible by Robert Reinhart, Published by Snow Dowd, 2007.
2. Reference Books: Adobe After Effects CS3 Professional by Adobe Creative Team, Published by Adobe Press, 2007.
3. Adobe Flash Cs3 Professional Bible by Robert Reinhardt, Snow Down, 2008.
4. Adobe Flash Cs3 Professional by Rich Shupe, 2007.

The Concerning teachers are also suggested to use other relevant material available on the net, to update the knowledge of the students...

Following are the recommended links, for further search-

- 1) www.tatamcgrawhill.com
- 2) www.books.google.co.in
- 3) www.penguinbooksindia.com
- 4) www.bookcafe.in
- 5) www.newindianbooks.com
- 6) www.newasiabooks.org