SOUTH GUJARAT UNIVERSITY, SURAT.

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Oourag		Title
Content-Course-I.	Paper-I	Research Methodology
	Paper-II.	Research Trends in Zoological Research.
Content-Course-JI.	Paper-Ill.	Various current topics.
Content Course-Ill,	Paper-IV.	This course will be framed by the Supervising teacher under whoa **the** candidate will be working for hie/ her dissertation. This course may b? different for different candidates. The course will be related to the dissertation work.

Course-I,

Research Methodology.

Pager=I. (i)

(ii) How to search review and use research literature.

Specified techniques in Zoological research and instrumentation tools & techniques.

Microaoop Use* Scope and types of microscopes-light phase contrast polavising, U.V. Electron, Interference Flouresent. Microtomy-Principles and practice-Fixatives, Fixation, Principles, Chemistry and effect on cell organee-lles. Staining methods- Histologic and Histochemistry.

Knowledge about other instruments also related to research undertaken.

Scientific reporting 1 Sorlnara and ropurtxx writ tin,;.

(i$ Coripitation of Expo rise n|*l "o cord-Writ tine holpo yuu renombcr Obaerre and tMnk. Writt-^pfc an-account of qp experiment during its progrosa. Writ tins progress report.

(2) C ©amnio at ion,
Internal report; letters and aonuranda cu:.raanlcatiin as a part of science.

{3} *Bm* Scientists should write
Explanation, clarity, coEg>lctenosa, lqpartlal'ity *rder, accuracy, objectivity, aiiaplioity, appr-priatonoas, balance, brevity, consistency, oontrol, interest, porauaaivonoos, precioion, sincerity, unity,

How to -write 1 nat r actions-

^ Unscientific writing- oxaoples.

' (*) Prograinae of writing-
Thinking and piaiming- information, idea*, topic, outlino of paragraph writinst, revising.

^ (5) Use of Vocabulary.
Waning of words, preciscruseage, toutology,*ynonyna, tfnneceaaary qualification of words apibi«uity.
Tec Jnical terns, noraonclaturj.
Context, auperfluo.ua words, oircun location, roa**on i'or verbosity. ,

(0) $ae of good English.
Foun, pronou*, verb, adverb, adjoctivo, conjunction, articles tenses, spellings etc.

(7) Hslping'tis reader.
Decide what t Is reader needs to knew, writo easy reading-how to *"battirii* dOntroi, explain, sentence length, f^bhum, style, Capture and hold readers interest.

(8) numbers contribute to preciaion
Tbs use of numbersa
X le use of tables
%p« Tha use of graphs and diagram,

(9) The art of illustrations, ink drawings, photography.
Writing; the legend or caption. Conplotcd illustration,

[1%) Reading
**w to read, making notes, writing a book review."

(it) The parts of a research report.
Introduction, *M/M,* Results, Dia«uosiwn, Susamary, Acknowledgements, Refereneeg,

fl2) The parts of tteoea and-projeot report:
Preparing the nanuscript, Preparing tte typescript, . *
Preparing tfe index, Preparing tic typesoript for tha printer.

(13) Editing and correcting.

(1*) Technique of Oral prebentsit ion;

Preparation uf ouaraary notes, cioiae an* use of audiovioual techaiquea , ■'Vciioc, Pr.onunoiati *on,* panctucitton, art. ioul'atioit,' opecd Qf.»dc2,iirery; just ifloati^n, Interest, directness, 'bixrrlty, sequence erpl'iasia,Qitati.Jn^ toutol^xy. T,is[r] tlaM?a,otor[r] Ifcrpct.heais / analya$3 and [j]ynt h&ais,

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(V) Met'hHs of field research*..

Books Reoojmaonded:- *-< -

(l) • SfethodOlGtfjr-tiK&xfcdar^ ilol o*y. ♦,.. Ralph ,B»-~

(5) Scientist must Wrlttf*.. IU Hftggftaa^^. OiufflB«to^|fc-.Jfewtfr^'ayy.^

(S) Writing Scientific Pajwrra in Bn^lisli -.

Xa?f* 0«Connor and SV Peter W&oddford

EideVier Excrepta ciedloa* < * • . • • ■

(A) The art of plajn talk..... Flcsch R.F.

(8) Guids for preyaratl<ta of "scientific paper for pyJ^s«atlian^and* fliiiie fpr pneparatio* of aat.npr'a-a>*etract for . * ~- -■ j'► **'--

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(17)S Statistioal*fflethode W.S. Dixon, & S[1]; Maaoey.

Papor«rr. - .- HSaearch ^renda in *Zoao/§Jcal raaearcij: .

Modem' «e net oca , Cellular andaoiecular Iiioic«y> ,. • Theae may o Janee from %%& to.tiae as per-the needs.

Di-ophysics:

1.

Staple Mathematical Eapwassions; nr^
What is a clo-rlvativo, Wist is .an integral, What is a differential, -viator oalculus^

" 2# ;'■•'.,."+ ,.Soa§ Physical fcroaa:

(a) .Mechanical forces- *Vezrtcn^Q 1-MB^* ofif'rts levers, compressed, gas. ,

(b) Osmotic force: Water balance

(c). EBle<rtiircal fr>rc^a-; - .Aloel^i^ foree? hydrogen bond*

(d) Generalised forces*

?. *Lme* of tterxnodynaniog. and concept of free energy - released, Role of ATP, the mobile power supply-:' • . » rioeneT cities- Electron transfer c hatn-JRegative entropy change in living svstem*

*♦ Speeds of sons processes: ,.,,<•- -v '■

(a) General prljttc^ple^-E^jiillibrlum*H&* steady state

(b) Ctemic-al :- Contatysis by.enzytnfisu -

(6} ELuid fia^-Properties- o f pia3ma, and of >lood,-.. . {d;} - Electrical conduction:- EEG & EKG. .

(e) Ifcat conduction- Wa* production and ,^at loss-*

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*.6** Biop^hysical studies On Neyro *?M hisrfla*

?♦<._ .:>»-' Matter vaves, Sound and altra 'sound«

, I Definition, illustration & absorption*' of. matter ^ares— T h3 u?e be r~ier hnexl *&r,* T h3 *bOay'•* s *wtert^y&-&ex,* mechanftrecept|Ora, Speech- • ., Noise;

6. Bloiuminlscehce. " ' \, , .

9» ionizing, radiation dosimetry, biological" noleculfts 0_2 effect and- target theory.

Booisi Re commended: ■ - . • ' •

fl) Molecular Biophysics- R.B. Setlow arid B.C. PoXl&EdV

■ f-2) Slop.hysicsr- -n.'A. Epstein. ■" *

• (S) I^iophysi«f. Concepts and Jfechanlsjns-a,j:-. Casey. ■

Moteobnoiogy.....».,..,.....».'."..Not'prepared I'

Inmnology.....•••»•••••••••.....- *'V » n n*

Physiology: ? " - ' - ' . ' '

J.. - Pre-biological chwaic-al evolution aHd Pr^gin of life; Evolution, of aaetabdlic pathways 'and nuiritjfre^ types, ' Evolution of specific protoiija, *ChrOaOs-aajB ari£ ■ haemoglobins. .•-"? ■■,':

2. PhyoiolO/slcal and Jio*ohBjal»^L. aspects of aging.

3» Imaune "responsea in animals,..... :

*. Physiological conxpensatlon to aiwirotwtftAal variations; *\%tW^^Bm?^ ^***&***r* aoejination and acclfciati-

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Modern Genetics:

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Behavioural patterns. I . . 7, ;"-W

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#6« Cell ular an*
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analysis and regulation, Mitosis and melbsls, uitutio apparatus, centriole-a,
synaptonemal complex,
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Cellular excitability.

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membrane including nuclear pores. Structure of chromatin.
■•...-■ *ffitte* structure and evidence that .DNA is the genet io material
Genetic code.

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ope^aon^ and regulation in pha«e lambda, structure of plaamid
genomes
Structure of chromatin,

Recommended 3ooe. - . "

Cell Siolqgy; C*J. Avera, 1976-Cell and Molecular, biology: DU Pra*,
3S.J. Molecular Genetics,' (V«L^r III):-j. K Taylor (ed.) Cell <V01,I~VI);
03fa&het,J. and A.£. MiTsky. : Te*t Look of Cytology; W.y. lirown
and*JEr.M. "Ifcrtke, 197*. Gene Expression (voi.l-in)'Lewin. Molecular
Hoiogy of the Gene: J*D..Wafesun. History of Kytolo*cy: AittiKks.
Mitochondrin; Lehninger, 13. •

Membranes of Mitochondria and Chi oroplasts:Racker.
H«i-1 ±<ook of Moelecular Cytology; A Lim^de-^aria*t*_j£6.9i - -
WhitehouJS/JllJf*^*[1]^ °fJ^9-J^«^Sia-*tr«fredlty:
Cell JUsion: *Jfexvla* ' '*""
Aspecte--of nuclear structure and function I.R.C. supplement. ST—
"CytoiOAical *lac* Inique : J.R. ibker, 1966.

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Tie *mial.* moleoulaf Uiology ^f Gene, J.D. Watson, 1978

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Intrescience publ. 197^78,

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Ac ad. Press. JST.Y. 1976. • - . . . . **»«*»•

19. Sa'fciSioo"[8]- * — ^'^[7].[4]--W.H. Freem^ and Co. 1977,

20, **iw^oitSSfa^sr^^Genctic -*p^us **-0.P.I.«***

21. : Cor tent Course^ II.

Paper-Ill. Current "topics from tie foiiowih* / « A

22. Scono^o and Applied-Zotflta •.-■'■*.'•«»•* „-*,. _.,
Endocrinology, Bn^rlr^«^! ii&» J^??**'
culture aftd fa^LoSStHTl^JS^ 1SSUe

i» -behaviour and ^iology

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Genetica of behaviour: Consequenecees of Lnetic *n*
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i» 'Evolution of be ha

*. Genetics a^i Ecolp^ of be^iou^,

10. Reproduction and * h*viour-.ourWip parental «***, , . ■.„,::

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LIology";-

1, Cellular and; mtfLecular aspects - of; ge&etfHtfn«8A4;' •
2, Molecular 3iQlogy of early 3evelopaaent fertilization,
3, Cell biology in early development
*♦ Morphogenesis -.and organogenesis.
vft«"£9*6fr42U>tfnt and di fife irentiatglpn,
6, Reeenartation, *yet* aplasia and neoplasia.
-t_4 ..:. Dtvfclopineint and'WnefiQ maiUpul.ations.
B* Hffereri^lation- Integrated approapji

3ooka Recommended: -

1. Differentiation Spi rings veria
.3* Sbieeular genetics- Tayl-or J. II,
*. Journal of Cell Biology
*. IHnd Book of biology of Aging PlnchC. Eayflick C,
*• HegulatiotL.of organ and tissue ^xowt h gress R.J.
6. Expirations in ^Developmental 3i 016*7.. $uit©n C& KLein A.0. -
7. Patterns and Principles of ^uiimal Derelopa»nt-Saundra. J.W, "

C ont ent Course-II l^

Paper-rv .,.: Topics from tie fi«ld selected for$_0$ dissertation 'area.