Bachelor of Science (Honours) - Medical Biotechnology

Programme Code: BMB

Duration – 4 Years Full Time

Programme Structure

And

Curriculum & Scheme of Examination

2010

AMITY UNIVERSITY UTTAR PRADESH
GAUTAM BUDDHA NAGAR
Amity University aims to achieve academic excellence by providing multi-faceted education to students and encourage them to reach the pinnacle of success. The University has designed a system that would provide rigorous academic programme with necessary skills to enable them to excel in their careers.

This booklet contains the Programme Structure, the Detailed Curriculum and the Scheme of Examination. The Programme Structure includes the courses (Core and Elective), arranged semester wise. The importance of each course is defined in terms of credits attached to it. The credit units attached to each course has been further defined in terms of contact hours i.e. Lecture Hours (L), Tutorial Hours (T), Practical Hours (P). Towards earning credits in terms of contact hours, 1 Lecture and 1 Tutorial per week are rated as 1 credit each and 2 Practical hours per week are rated as 1 credit. Thus, for example, an L-T-P structure of 3-0-0 will have 3 credits, 3-1-0 will have 4 credits, and 3-1-2 will have 5 credits.

The Curriculum and Scheme of Examination of each course includes the course objectives, course contents, scheme of examination and the list of text and references. The scheme of examination defines the various components of evaluation and the weightage attached to each component. The different codes used for the components of evaluation and the weightage attached to them are:

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<th>Components</th>
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<th>Weightage (%)</th>
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It is hoped that it will help the students study in a planned and a structured manner and promote effective learning. Wishing you an intellectually stimulating stay at Amity University.

July, 2010
PROGRAMME OBJECTIVE

The aim of this programme is to introduce the fundamental of classification, structure, ecology and evolution of living organism and thereby develop an understanding of major principles and concept of biology and to understand the structure and function of cells, tissues and organs which may help to develop an understating of the processes and principles of heredity. Also it is necessary to demonstrate and appreciation of the business perspectives of medical biotechnology, understanding of scientific, technological and commercial activity of selective biomedical industries and research institutions. To develop and understanding of complexity and organisation of eukaryotic genome and to evaluate current research on the molecular basis of the control of eukaryotic gene expression development in genomics and bioinformatics, it needs to apply intellectual, organizational and technical skills to a specific aspects of biological sciences or biotechnology.
# PROGRAMME STRUCTURE

## FIRST SEMESTER

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Note: The students will study English from I semester but final evaluation will be done at the end of IIInd semester. However continuous evaluation will start from the 1st Semester.

## SECOND SEMESTER

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## THIRD SEMESTER - I

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### BMB 343 Behavioural Science - III 1
### BMB 344 Foreign Language - III 2
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### BMB 330 Term Paper – I (Evaluation) - 3

**TOTAL** 28

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**SUMMER INTERNSHIP: 8 - 10 WEEKS**

**SEVENTH SEMESTER**

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**EIGHTH SEMESTER**

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PRINCIPLES OF BIOLOGY

Course Objective:
The aim of this course is to introduce the fundamental of classification, structure, ecology and evolution of living organism and thereby develop an understanding of major principles and concept of biology.

Course Contents:

Module I
Evolutionary processes—changes in form and functions of animals

Module II
Nutrition, digestion and absorption of animals

Module III
Plant physiology: photosynthesis, respiration and hormones

Module IV
Principles of communication and movement in animals

Module V
Biology of reproduction of higher plants

Module VI
Characteristics of aquatic, terrestrial and amphibious mode of life of plants.

Examination Scheme:

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Text & References:

Text:
- Foundations in Microbiology by K. Talora and A. Talora. Publisher Wm C Brown

References:
- Instant notes in Microbiology by J. Nicklin, et al. Publisher Bioscientific
- Biology by N.A. Campbell. Publisher Benjamin Cummings
- Ecology & Environment, P.D. Sharma, Rastogi Publications.
- Plant Physiology, S. N. Pandey, B. K. Sinha, Vikas Publishing House
INSTRUMENTATION AND ANALYTICAL TECHNIQUES - I

Course Code: BMB 102
Credit Units: 03

Course Objective:
The aim is to develop competency and expertise in experimental techniques methodologies and safe laboratory practice.

Course Contents:

Module I
Laboratory hazards --- health and safety regulations (COSHH-Control of substances hazardous to health)

Module II
Separative, analytical and diagnostic skills in laboratory work

Module III
Skills of data collection, recording and report writing

Module IV
Basic instrumentation, preparation of cell and tissue for microscopy and quantitative techniques

Module V
Maintenance of sterile conditions, preparation of media, culture and identification of microorganisms

Module VI
Spectrophotometric and related assays and evaluation of enzyme catalyzed reactions

Module VII
Principles of Biostatistics—mean, standard error and regression, coefficient of samples—test of significance (‘t’ test and Chi-square)—design and evaluation of a biological experiments--distribution patterns of data

Examination Scheme:

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</table>

Text & References:

- Analytical Biochemistry by D.J. Holme and H. Peck. Publisher: Longman
- Microbiology: A Laboratory manual by J.G. Cappuccino and N. Sherman. Publisher: Benjamin Cummings
- Practical Skills in Biology by A. Jones, R. Read and J. Weyers. Publisher: Longman
- Statistical and data handling skills in Biology by R. Ennos. Publisher: Printice Hall
CELL BIOLOGY AND GENETICS

Course Code: BMB 103     Credit Units: 04

Course Objective:
The aim is to understand the structure and function of cells and tissues which may help to develop an understating the cell as a system and also the basic principles of heredity.

Course Contents:

Module I
The cell theory,
Introduction to prokaryotic and eukaryotic cells.

Module II
Functional morphology of plasma membrane, cell organelles (mitochondria, ribosome, golgi bodies, endoplasmic reticulum, lysosomes, cytoskeletal system, nucleus and intercellular junctions).

Module III
Differences between plant, animal and microbial cells, tissue system in animals.

Module IV
Cell cycle, Mitosis and meiosis.

Module V
Mendelian laws of inheritance—dominant, recessive and multiple alleles. Linkage and crossing over—sex linked inheritance and sex determined characters.

Examination Scheme:

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</table>

Text & References:

Text:
- Cell and molecular biology by De Robertis.
- Genetics by M.W. Strickberger. Publisher : Prentice Hall College Division
- Genetics from Genes to Genomes by Publisher : McGraw Hill Higher Education

References:
- Concepts of Genetics (Sixth Edition) by William S. Klug and Michael R, Cummings. Publisher : Pearson Education
- Principles of Genetics by E J Gardner. Publisher: John Wiley & Sons Inc.
- Cell and Molecular Biology by Gerald Karp, John Wiley and Sons Inc.
INTRODUCTORY CHEMISTRY

Course Code: BMB 104      Credit Units: 04

Course Objective:
This course is meant for the basic concept about the structure, function and bonding of different atoms and molecules. Also the students will learn about the molar concept and redox potential of different solutions, structure and reaction of hydrocarbons along with functional groups.

Course Contents:

Module I
The Periodic Table and its properties,

Module II
Intermolecular forces and different types of chemical bonding,

Module III
Chemical formulae and Chemical Equation, balancing equation,

Module IV
The concept of mole and preparation of molar solution, Acid-base reactions and redox potential,

Module V
Structure, nomenclature and reactions of hydrocarbons,

Module VI
Identification of functional groups

Examination Scheme:

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</tbody>
</table>

Text & References:

- Fundamental of General, Organic & Biological Chemistry by J.R. Holum. Publisher: John Willey
- Chemistry – Matter and its changes by J.E. Brady and J.R. Holum. Publisher: John Willey
INTRODUCTION TO IT

Course Code: BMB 105 Credit Units: 03

Course Objective:
The aim is to enable the students to acquire and demonstrate competence in basic IT and information skills and to use presentation tools.

Course Contents:

Module I
Information skills theme, Invoking application programs using a personal computer’s operating environment, Design and set up an efficient file storage structure, Appropriate handling of storage media to avoid corruption of files, Using of an email client to send and receive messages and send and read attached documents, Effective searching of online resources on the world wide web.

Module II
World Processing Theme
Use a word-processor to produce well formatted and organized documents, Use appropriate page and line formats, Use appropriate typefaces, Use appropriate layout,
Use appropriate advanced features such as Headers and Footers, Tables.

Module III
Spreadsheet Theme
Use a spreadsheet to produce numeric models and graphical representations of data. Use appropriate cell contents and types, Use appropriate cell properties and layout,
Use appropriate functions and formulae, Show graphical representations of selected data sets

Module IV
Presentation These
Use a presentation package to design a presentation, Design a graphical presentation,
Embed data from other computer applications, Present findings to an audience of peers.

Module V
Library Theme
Searching remote and local libraries, using references, searching the CD-ROM Network

Examination Scheme:

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</table>

Text & References:

Text:
- Basic Computer Skill made simple by Jackie Sherman. Publisher: Oxford: Made Simple Books
- Learn to Pass ECDL using office 2000 by Angela Bessant. Publisher: Oxford: Heinemann

References:
- Basic Computer Skill made simple by Jackie Sherman. Publisher: Oxford: Made Simple Books
- Learn to Pass ECDL using office 2000 by Angela Bessant. Publisher: Oxford: Heinemann
- A book on C by Kelley: Programming in C. Publisher: Addison-Wesley Publishing
- Computer Science by J.G. Brookshear. Publisher: Pearson, Addison Wesley
- Introduction to C++ for Engineers and Scientists. Publisher: Prentice-Hall
- Schaum’s Outline of Introduction of Computer Science by P. Cushman and R. Mata-Toledo. Publisher: McGraw Hill Trade
Course Objective:
The term environment is used to describe, in the aggregate, all the external forces, influences and conditions, which affect the life, nature, behaviour and the growth, development and maturity of living organisms. At present a great number of environment issues, have grown in size and complexity day by day, threatening the survival of mankind on earth. A study of environmental studies is quite essential in all types of environmental sciences, environmental engineering and industrial management. The objective of environmental studies is to enlighten the masses about the importance of the protection and conservation of our environment and control of human activities which has an adverse effect on the environment.

Course Contents:

Module I: The multidisciplinary nature of environmental studies
Definition, scope and importance
Need for public awareness

Module II: Natural Resources
Renewable and non-renewable resources:
Natural resources and associated problems
Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies.
Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.
- Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyles.

Module III: Ecosystems
Concept of an ecosystem
Structure and function of an ecosystem
Producers, consumers and decomposers
Energy flow in the ecosystem
Ecological succession
Food chains, food webs and ecological pyramids
Introduction, types, characteristic features, structure and function of the following ecosystem:
  a. Forest ecosystem
  b. Grassland ecosystem
  c. Desert ecosystem
  d. Aquatic ecosystems (ponds, streams, lakes, rivers, ocean estuaries)

Module IV: Biodiversity and its conservation
Introduction – Definition: genetic, species and ecosystem diversity
Biogeographical classification of India
Value of biodiversity: consumptive use, productive use, social, ethical aesthetic and option values
Biodiversity at global, national and local levels
India as a mega-diversity nation
Hot-spots of biodiversity
Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts
Endangered and endemic species of India
Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity

Module V: Environmental Pollution
Definition
  Causes, effects and control measures of:
    a. Air pollution
    b. Water pollution
c. Soil pollution
d. Marine pollution
e. Noise pollution
f. Thermal pollution
g. Nuclear pollution

Solid waste management: Causes, effects and control measures of urban and industrial wastes.
Role of an individual in prevention of pollution.
Pollution case studies.
Disaster management: floods, earthquake, cyclone and landslides.

Module VI: Social Issues and the Environment
From unsustainable to sustainable development
Urban problems and related to energy
Water conservation, rain water harvesting, watershed management
Resettlement and rehabilitation of people; its problems and concerns. Case studies.
Environmental ethics: Issues and possible solutions
Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
Wasteland reclamation
Consumerism and waste products
Environmental Protection Act
Air (Prevention and Control of Pollution) Act
Water (Prevention and control of Pollution) Act
Wildlife Protection Act
Forest Conservation Act
Issues involved in enforcement of environmental legislation
Public awareness

Module VII: Human Population and the Environment
Population growth, variation among nations
Population explosion – Family Welfare Programmes
Environment and human health
Human Rights
Value Education
HIV / AIDS
Women and Child Welfare
Role of Information Technology in Environment and Human Health
Case Studies

Module VIII: Field Work
Visit to a local area to document environmental assets-river / forest/ grassland/ hill/ mountain.
Visit to a local polluted site – Urban / Rural / Industrial / Agricultural
Study of common plants, insects, birds
Study of simple ecosystems-pond, river, hill slopes, etc (Field work equal to 5 lecture hours)

Examination Scheme:

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Text & References:

- Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad 380 013, India, Email:mapin@icenet.net (R)
- Clark R.S., Marine Pollution, Claderson Press Oxford (TB)
- De A.K., Environmental Chemistry, Wiley Eastern Ltd.
- Down to Earth, Centre for Science and Environment (R)
- Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay (R)
• Mhaskar A.K., Matter Hazardous, Techno-Science Publication (TB)
• Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co. (TB)
• Survey of the Environment, The Hindu (M)
• Townsend C., Harper J, and Michael Begon, Essentials of Ecology, Blackwell Science
• Trivedi R.K., Handbook of Environmental Laws, Rules Guidelines, Compliances and Standards, Vol I and II, Enviro Media (R)
• Trivedi R. K. and P.K. Goel, Introduction to air pollution, Techno-Science Publication (TB)
CELL BIOLOGY AND GENETICS LAB

Course Code: BMB 120 Credit Units: 02

Course Objective:
The aim is to understand the structure and function of cells, tissues and organs which may help to develop an understanding of the processes and principles of heredity.

Course Contents:

Module I
Differences between plant, animal and microbial cells, electron micrographs of prokaryotic and eukaryotic cells.

Module II
Cell cycle, mitosis and meiosis, slide preparation of barr bodies.

Module III
Karyotype of humans, blood group analysis, calculate the monohybrid and dihybrid ratios from the given samples

Module IV
Linkage and crossing over—Numerical to be solved

Examination Scheme:

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<th>Mid Term Viva</th>
<th>Attendance</th>
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INSTRUMENTATION AND ANALYTICAL TECHNIQUES LAB - I

Course Code: BMB 121       Credit Units: 02

Course Objective:
The aim is to develop competency and expertise in experimental techniques methodologies and safe laboratory practice.

Course Contents:

Module I
Skills of data collection, recording and report writing

Module II
Basic instrumentation, preparation of cell and tissue for microscopy and quantitative techniques

Module III
Maintenance of sterile conditions, preparation of media, culture and identification of microorganisms

Module IV
Spectrophotometric and related assays and evaluation of enzyme catalyzed reactions

Examination Scheme:

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</table>
Course Objective:
The course is intended to give a foundation of English Language. The literary texts are indented to help students to inculcate creative & aesthetic sensitivity and critical faculty through comprehension, appreciation and analysis of the prescribed literary texts. It will also help them to respond from different perspectives.

Course Contents:

Module I: Vocabulary
Use of Dictionary
Use of Words: Diminutives, Homonyms & Homophones

Module II: Essentials of Grammar - I
Articles
Parts of Speech
Tenses

Module III: Essentials of Grammar - II
Sentence Structure
Subject -Verb agreement
Punctuation

Module IV: Communication
The process and importance
Principles & benefits of Effective Communication

Module V: Spoken English Communication
Speech Drills
Pronunciation and accent
Stress and Intonation

Module VI: Communication Skills-I
Developing listening skills
Developing speaking skills

Module VII: Communication Skills-II
Developing Reading Skills
Developing writing Skills

Module VIII: Written English communication
Progression of Thought/ideas
Structure of Paragraph
Structure of Essays

Module IX: Short Stories
Of Studies, by Francis Bacon
Dream Children, by Charles Lamb
The Necklace, by Guy de Maupassant
A Shadow, by R.K.Narayan
Glory at Twilight, Bhabani Bhattacharya

Module X: Poems
All the Worlds a Stage Shakespeare
To Autumn Keats
O! Captain, My Captain. Walt Whitman
Where the Mind is Without Fear Rabindranath Tagore
Psalm of Life H.W. Longfellow

Examination Scheme:

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</table>
Text & References:

- Madhulika Jha, Echoes, Orient Long Man
- Successful Communications, Malra Treece (Allyn and Bacon)
- Effective Technical Communication, M. Ashraf Rizvi.

* 30 hrs Programme to be continued for Full year
BEHAVIOURAL SCIENCE - I  
(UNDERSTANDING SELF FOR EFFECTIVENESS)

Course Code: BMB 143      Credit Units: 01

Course Objective:
This course aims at imparting:
• Understanding self & process of self exploration
• Learning strategies for development of a healthy self esteem
• Importance of attitudes and its effective on personality
• Building Emotional Competence

Course Contents:

Module I: Self: Core Competency
Understanding of Self
Components of Self – Self identity
Self concept
Self confidence
Self image

Module II: Techniques of Self Awareness
Exploration through Johari Window
Mapping the key characteristics of self
Framing a charter for self
Stages – self awareness, self acceptance and self realization

Module III: Self Esteem & Effectiveness
Meaning and Importance
Components of self esteem
High and low self esteem
Measuring your self esteem

Module IV: Building Positive Attitude
Meaning and nature of attitude
Components and Types of attitude
Importance and relevance of attitude

Module V: Building Emotional Competence
Emotional Intelligence – Meaning, components, Importance and Relevance
Positive and Negative emotions
Healthy and Unhealthy expression of emotions

Module VI: End-of-Semester Appraisal
Viva based on personal journal
Assessment of Behavioural change as a result of training
Exit Level Rating by Self and Observer

Text & References:
• Organizational Behaviour, Davis, K.
• Hoover, Judith D. Effective Small Group and Team Communication, 2002, Harcourt College Publishers
• Bates, A. P. and Julian, J.: Sociology - Understanding Social Behaviour
• Dressler, David and Cans, Donald: The Study of Human Interaction
• Lapiere, Richard. T – Social Change
• Lindzey, G. and Borgatta, E: Sociometric Measurement in the Handbook of Social Psychology, Addison – Welsley, US.
• LaFasto and Larson: When Teams Work Best, 2001, Response Books (Sage), New Delhi
• J William Pfeiffer (ed.) Theories and Models in Applied Behavioural Science, Vol 2, Group (1996); Pfeiffer & Company
FRENCH - I

Course Code: BMB 144 Credit Units: 02

Course Objective:
To familiarize the students with the French language
• with the phonetic system
• with the syntax
• with the manners
• with the cultural aspects

Course Contents:

Module A: pp. 01 to 37: Unités 1, 2, Unité 3 Objectif 1, 2
Only grammar of Unité 3: objectif 3, 4 and 5

Contenu lexical: Unité 1: Découvrir la langue française : (oral et écrit)
1. se présenter, présenter quelqu’un, faire la connaissance des autres, formules de politesse, rencontres
2. dire/interroger si on comprend
3. Nommer les choses

Unité 2: Faire connaissance
1. donner/demander des informations sur une personne, premiers contacts, exprimer ses goûts et ses préférences
2. Parler de soi: parler du travail, de ses activités, de son pays, de sa ville.

Unité 3: Organiser son temps
1. dire la date et l’heure

Contenu grammatical:
1. organisation générale de la grammaire
2. article indéfini, défini, contracté
3. nom, adjecitif, masculin, féminin, singulier et pluriel
4. négation avec « de », "moi aussi", "moi non plus"
5. interrogation : Inversion, est-ce que, qui, que, quoi, qu’est-ce que, où, quand, comment, quel(s), quelle(s)
   Interro-négatif : réponses : oui, si, non
6. pronom tonique/disjoint- pour insister après une préposition
7. futur proche

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:
• le livre à suivre : Campus: Tome 1
GERMAN - I

Course Code: BMB 145      Credit Units: 02

Course Objective:
To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.
To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany

Course Contents:

Module I: Introduction
Self introduction: heissen, kommen, wohnen, lernen, arbeiten, trinken, etc.
All personal pronouns in relation to the verbs taught so far.
Greetings: Guten Morgen!, Guten Tag!, Guten Abend!, Gute Nacht!, Danke sehr!, Danke!, Vielen Dank!, (es tut mir Leid!),
Hallo, wie geht’s?; Danke gut!, sehr gut!, prima!, ausgezeichnet!,
Es geht!, nicht so gut!, so la la!, miserabel!

Module II: Interviewspiel
To assimilate the vocabulary learnt so far and to apply the words and phrases in short dialogues in an interview – game for self introduction.

Module III: Phonetics
Sound system of the language with special stress on Diphthongs

Module IV: Countries, nationalities and their languages
To make the students acquainted with the most widely used country names, their nationalities and the language spoken in that country.

Module V: Articles
The definite and indefinite articles in masculine, feminine and neuter gender. All Vegetables, Fruits, Animals, Furniture, Eatables, modes of Transport

Module VI: Professions
To acquaint the students with professions in both the genders with the help of the verb “sein”.

Module VII: Pronouns
Simple possessive pronouns, the use of my, your, etc.
The family members, family Tree with the help of the verb “to have”

Module VIII: Colours
All the color and color related vocabulary – colored, colorful, colorless, pale, light, dark, etc.

Module IX: Numbers and calculations – verb “kosten”
The counting, plural structures and simple calculation like addition, subtraction, multiplication and division to test the knowledge of numbers.
“Wie viel kostet das?”

Module X: Revision list of Question pronouns
W – Questions like who, what, where, when, which, how, how many, how much, etc.

Examination Scheme:

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</table>

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Wolfgang Hieber, Lernziel Deutsch
- Hans-Heinrich Wangler, Sprachkurs Deutsch
- Schulz Griesbach, Deutsche Sprachlehre für Ausländer
- P.L Aneja, Deutsch Interessant- 1, 2 & 3
- Rosa-Maria Dallapiazza et al, Tangram Aktuell A1/1,2
- Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs
Course Objective:
To enable students acquire the relevance of the Spanish language in today’s global context, how to greet each other. How to present / introduce each other using basic verbs and vocabulary.

Course Contents:

Module I
A brief history of Spain, Latin America, the language, the culture…and the relevance of Spanish language in today’s global context.
Introduction to alphabets

Module II
Introduction to ‘Saludos’ (How to greet each other. How to present / introduce each other).
Goodbyes (despedidas)
The verb llamarse and practice of it.

Module III
Concept of Gender and Number
Months of the years, days of the week, seasons. Introduction to numbers 1-100, Colors, Revision of numbers and introduction to ordinal numbers.

Module IV
Introduction to SER and ESTAR (both of which mean To Be). Revision of ‘Saludos’ and ‘Llamarse’. Some adjectives, nationalities, professions, physical/geographical location, the fact that Spanish adjectives have to agree with gender and number of their nouns. Exercises highlighting usage of Ser and Estar.

Module V
Time, demonstrative pronoun (Este/esta, Aquel/aquella etc)

Module VI
Introduction to some key AR/ER/IR ending regular verbs.

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Español, En Directo I A
- Español Sin Fronteras
Course Objective:
To enable the students to learn the basic rules of grammar and Japanese language to be used in daily life that will later help them to strengthen their language.

Course Contents:

Module I: Salutations
Self introduction, Asking and answering to small general questions

Module II: Cardinal Numbers
Numerals, Expression of time and period, Days, months

Module III: Tenses
Present Tense, Future tense

Module IV: Prepositions
Particles, possession, Forming questions

Module V: Demonstratives
Interrogatives, pronoun and adjectives

Module VI: Description
Common phrases, Adjectives to describe a person

Module VII: Schedule
Time Table, everyday routine etc.

Module VIII: Outings
Going to see a movie, party, friend’s house etc.

Learning Outcome
➢ Students can speak the basic language describing above mentioned topics

Methods of Private study /Self help
➢ Handouts, audio-aids, and self-do assignments and role-plays will support classroom teaching

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

Text:
● Teach yourself Japanese

References:
● Shin Nihongo no kiso 1
Course Objective:
There are many dialects spoken in China, but the language which will help you through wherever you go is Mandarin, or Putonghua, as it is called in Chinese. The most widely spoken forms of Chinese are Mandarin, Cantonese, Gan, Hakka, Min, Wu and Xiang. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

Course Contents:

Module I
Show pictures, dialogue and retell.
Getting to know each other.
Practicing chart with Initials and Finals. (CHART – The Chinese Phonetic Alphabet Called “Hanyu Pinyin” in Mandarin Chinese.)
Practicing of Tones as it is a tonal language.
Changes in 3rd tone and Neutral Tone.

Module II
Greetings
Let me Introduce
The modal particle “ne”.
Use of Please ‘qing” – sit, have tea ………….. etc.
A brief self introduction – Ni hao ma? Zaijian!
Use of “bu” negative.

Module III
Attributives showing possession
How is your Health? Thank you
Where are you from?
A few Professions like – Engineer, Businessman, Doctor, Teacher, Worker.
Are you busy with your work?
May I know your name?

Module IV
Use of “How many” – People in your family?
Use of “zhe” and “na”.
Use of interrogative particle “shenme”, “shui”, “ma” and “nar”.
How to make interrogative sentences ending with “ma”.
Structural particle “de”.
Use of “Nin” when and where to use and with whom. Use of guixing.
Use of verb “zuo” and how to make sentences with it.

Module V
Family structure and Relations.
Use of “you” – “mei you”.
Measure words
Days and Weekdays.
Numbers.
Maps, different languages and Countries.

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

• “Elementary Chinese Reader Part I” Lesson 1-10
INTRODUCTION TO BIOTECHNOLOGY AND BIOMEDICAL SCIENCES

Course Code: BMB 201  Credit Units: 03

Course Objective:
To introduce the scope and potential of biotechnology and the biomedical sciences.

Course Contents:

Module I
Recombinant DNA technology, Fermentation technology, Cloning, Transgenic animals and plants, Monoclonal antibodies, Environmental biotechnology.

Module II
Importance of blood parameters and serological tests,
Blood and cell transfusion practices,

Module III
Medical Microbiology with special reference to common Bacterial and Viral diseases

Module IV
Principles of chemical analysis of blood and body fluids,

Module V
Aspects of pathology and pharmacology,

Examination Scheme:

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Text & References:

Text:
- Introduction to Biotechnology by C.M. Brown, L. Campbell & F.G. Priest
- Molecular Biotechnology by S.B. Primrose
- Handbook of Laboratory Culture Media, Reagents, Stains and Buffers by N. Kannan

References:
- Scientific American
- New Scientist
- Nature
- Nature Medicines
- Nature Biotechnology
CHEMISTRY FOR BIOSCIENCES

Course Code: BMB 202  Credit Units: 03

Course Objective:
The aim is to provide an understanding of chemistry to support further study in bio, environmental and chemical sciences.

Course Contents:

Module I
Equilibria, $K_{eq}$ for an isolated reaction. Dissociation pH & pKa with reference to carboxylic acids, PI, variation of charged species with pH, Buffering. Introduction to bioenergetics, descriptive treatment of $\Delta H$ and $\Delta S$, $\Delta G$, and 2nd law of thermodynamics.

Module II
Introduction to stereochemistry, Chirality, enantiomers,

Module III

Module IV
Introduction to monosaccharides, disaccharides and polysaccharides-glycosidic bonds

Module V
Introduction to structure, nomenclature and reactivity of aromatic compounds

Examination Scheme:

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</table>

Text & References:

- Fundamental of General, Organic and Biological Chemistry (Fifth Edition) by J.R. Holum. Publisher : John Wiley & Sons
- Biochemistry by Voet & Voet. Publisher : Wiley
MICROBIOLOGY

Course Code: BMB 203  Credit Units: 03

Course Objective:
The aim is to introduce microbial classification, structure and ecology and develop an understanding of the major principles and concept of microbiology.

Course Contents:

Module I
Introduction and historical perspective - Discovery of the microbial world, controversy over spontaneous generation, role of microorganisms in transformation of organic matter and in the causation of diseases, development of pure culture methods. Methods in Microbiology - Principles of microbial nutrition, Culture media, Theory and practice of sterilization, pure culture techniques
Microbiology as basic medical science – Taxonomy of microorganisms-- major difference between prokaryotic and eukaryotic microorganisms.

Module II
Ultrastructure and function of medically important bacteria, fungi, protozoa, algae and viruses.

Module III
Microbial world and distribution of bacteria in various special environments. Archea, thermophiles, psychrophiles, acidophiles, halophiles and hyperthermophiles.

Module IV
Microbial growth – physical and chemical requirements – biotic and abiotic factors affecting growth – measurement of growth – physical & chemical agents controlling growth Bacterial and viral cell cycle.

Examination Scheme:

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</table>

Text & References:

Text:
- General Microbiology by R.Y. Stainer et al. Publisher: McMillan
- Foundation of Microbiology (Third Edition) by K. Talaro & A. Talaro. Publisher: WCB
- Introduction to Bacteria by P. Singleton. Publisher: Wiley
- Principles of Microbiology by R.M. Atlas.

References:
- Microbiology by Prescott, Harley & Klein
- Microbiology : A Laboratory Manual by J.G. Cappuccino & Sherman
- Instant notes in Microbiology by Nicklin et al.
**Course Objective:**
The aim is to provide for an understanding of the relationship between structure and function in the major classes of biopolymers.

**Course Contents:**

**Module I**
Proteins – classification, structure and functions with reference to special proteins.

**Module II**
Nucleic acids – their structure and properties – encoding genetic information.

**Module III**
Carbohydrates – classification, structure and properties with examples

**Module IV**
Lipids – classification, structure and properties with examples

**Examination Scheme:**

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**Text & References:**

**Text:**
- Biological Molecules by L.A. Smith and G.J. Wood. Publisher: Chapman & Hall

**References:**
Course Objective:
The aim is to provide a basic understanding of the role and control of selected physiological processes in health.

Course Contents:

Module I
Principles of Physiology – maintenance of homeostasis

Module II
Body fluids – composition of intra and extra cellular fluids – physiological role of ions, amino acids and lipids

Module III

Module IV
Cardiovascular physiology – Structure and function of heart – pattern of circulation – electro physiology of the heart and its measurement – controls of cardiac performance – blood pressure.

Module V

Examination Scheme:

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Text & References:

Text:

References:
- Essentials of Anatomy & Physiology by E.N. Marieb. Publisher: Addison Wesley, Longman
MICROBIOLOGY LAB

Course Code:  BMB 220      Credit Units: 02

Course Objective:
The aim is to introduce microbial classification, structure and ecology and develop an understanding of the major principles and concept of microbiology.

Course Contents:

Module I
Aseptic techniques—Preparation of media, culture slants, and culture plates, Methods of sterilization, disinfection and inoculation.

Module II
Purification techniques—streak plate, pour plate and spread plate

Module III
Isolation of bacteria from air and water samples, Detection of coliform bacteria on EMB

Module IV
Estimation of water quality by BOD, COD and spe.

Module V
Staining techniques—gram’s staining, endospore staining and lactophenol cotton blue mount of fungal materials.

Module VI
Metabolic characterisation of microorganism by IMVIC test, Antibiotic sensitivity test of microbes by antibiotic doses, Growth curve of E. coli by spectrophotometer.

Examination Scheme:

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BIOCHEMISTRY LAB - I

Course Code: BMB 221      Credit Units: 02

Course Objective:
The aim is to provide for an understanding of the relationship between structure and function in the major classes of biopolymers.

Course Contents:

Module I
Color reactions of carbohydrates:
Molisch’s Test
Iodine Test
Benedict’s Test
Fehling’s Test
Bial’s Test
Seliwanaff’s Test

Module II
Color reactions of proteins
Biuret Test
Xanthaproteic Test

Module III
Paper chromatography of amino acids

Module IV
Agarose gel electrophoresis of DNA

Module V
Quantification of proteins by Brad ford test

Module VI
Quantification of proteins by Lowry-Folins test

Examination Scheme:

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SYSTEM PHYSIOLOGY LAB – I

Course Code: BMB 222      Credit Units: 02

Course Objective:
The aim is to provide a basic understanding of the role and control of selected physiological processes in health.

Course Contents:

Module I
To determine the blood groups from the given blood samples.

Module II
To determine % of haemoglobin from the given blood samples.

Module III
To determine the RBC count from the given blood samples.

Module IV
To determine the WBC count from the given blood samples.

Examination Scheme:

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Course Objective:
The course is intended to give a foundation of English Language. The literary texts are intended to help students to inculcate creative & aesthetic sensitivity and critical faculty through comprehension, appreciation and analysis of the prescribed literary texts. It will also help them to respond from different perspectives.

Course Contents:

Module I: Vocabulary
Use of Dictionary
Use of Words: Diminutives, Homonyms & Homophones

Module II: Essentials of Grammar - I
Articles
Parts of Speech
Tenses

Module III: Essentials of Grammar - II
Sentence Structure
Subject - Verb agreement
Punctuation

Module IV: Communication
The process and importance
Principles & benefits of Effective Communication

Module V: Spoken English Communication
Speech Drills
Pronunciation and accent
Stress and Intonation

Module VI: Communication Skills-I
Developing listening skills
Developing speaking skills

Module VII: Communication Skills-II
Developing Reading Skills
Developing writing Skills

Module VIII: Written English communication
Progression of Thought/ideas
Structure of Paragraph
Structure of Essays

Module IX: Short Stories
Of Studies, by Francis Bacon
Dream Children, by Charles Lamb
The Necklace, by Guy de Maupassant
A Shadow, by R.K. Narayan
Glory at Twilight, Bhabani Bhattacharya

Module X: Poems
All the Worlds a Stage  Shakespeare
To Autumn  Keats
O! Captain, My Captain.  Walt Whitman
Where the Mind is Without Fear  Rabindranath Tagore
Psalm of Life  H.W. Longfellow

Examination Scheme:

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Text & References:

- Madhulika Jha, Echoes, Orient Long Man
- Successful Communications, Malra Treece (Allyn and Bacon)
- Effective Technical Communication, M. Ashraf Rizvi.
BEHAVIOURAL SCIENCE - II  
(PROBLEM SOLVING AND CREATIVE THINKING)

Course Code: BMB 243        Credit Units: 01

Course Objective:
To enable the students:  
Understand the process of problem solving and creative thinking.  
Facilitation and enhancement of skills required for decision-making.

Course Contents:

Module I: Thinking as a tool for Problem Solving  
What is thinking: The Mind/Brain/Behaviour  
Critical Thinking and Learning:  
Making Predictions and Reasoning  
Memory and Critical Thinking  
Emotions and Critical Thinking  
Thinking skills

Module II: Hindrances to Problem Solving Process  
Perception  
Expression  
Emotion  
Intellect  
Work environment

Module III: Problem Solving  
Recognizing and Defining a problem  
Analyzing the problem (potential causes)  
developing possible alternatives  
Evaluating Solutions  
Resolution of problem  
Implementation  
Barriers to problem solving:  
Perception  
Expression  
Emotion  
Intellect  
Work environment

Module IV: Plan of Action  
Construction of POA  
Monitoring  
Reviewing and analyzing the outcome

Module V: Creative Thinking  
Definition and meaning of creativity  
The nature of creative thinking  
Convergent and Divergent thinking  
Idea generation and evaluation (Brain Storming)  
Image generation and evaluation  
Debating  
The six-phase model of Creative Thinking: ICEDIP model

Module VI: End-of-Semester Appraisal  
Viva based on personal journal  
Assessment of Behavioural change as a result of training  
Exit Level Rating by Self and Observer

Text & References:

- Michael Steven: How to be a better problem solver, Kogan Page, New Delhi, 1999
- Geoff Petty: How to be better at creativity; Kogan Page, New Delhi, 1999
• Phil Lowe Koge Page: Creativity and Problem Solving, New Delhi, 1996
• J William Pfeiffer (ed.) Theories and Models in Applied Behavioural Science, Vol 3, Management (1996); Pfeiffer & Company
Course Objective:
To enable the students to overcome the fear of speaking a foreign language and take position as a foreigner speaking French.
To make them learn the basic rules of French Grammar.

Course Contents:
Module A: pp.38 – 47: Unité 3: Objectif 3, 4, 5, 6
Module B: pp. 47 to 75 Unité 4, 5

Contenu lexical:
Unité 3: Organiser son temps
1. donner/demander des informations sur un emploi du temps, un horaire
   SNCF – Imaginer un dialogue
2. rédiger un message/ une lettre pour …
   i) prendre un rendez-vous/ accepter et confirmer/ annuler
   ii) inviter/accepter/refuser
3. Faire un programme d’activités
   imaginer une conversation téléphonique/un dialogue
   Propositions- interroger, répondre

Unité 4: Découvrir son environnement
1. situer un lieu
2. s’orienter, s’informer sur un itinéraire.
3. Chercher, décrire un logement
4. connaître les rythmes de la vie

Unité 5: s’informer
1. demander/donner des informations sur un emploi du temps passé.
2. donner une explication, exprimer le doute ou la certitude.
3. découvrir les relations entre les mots
4. savoir s’informer

Contenu grammatical:
1. Adjectifs démonstratifs
2. Adjectifs possessifs/exprimer la possession à l’aide de :
   i. « de » ii. A+nom/pronom disjoint
3. Conjugaison pronominale – négative, interrogative -
   construction à l’infinitif
4. Impératif/exprimer l’obligation/ l’interdiction à l’aide de « il
   faut… »/ « il ne faut pas… »
5. passé composé
6. Questions directes/indirectes

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:
• le livre à suivre : Campus: Tome 1
GERMAN – II

Course Code: BMB 245      Credit Units: 02

Course Objective:
To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.
To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany
Introduction to Grammar to consolidate the language base learnt in Semester I

Course Contents:

Module I: Everything about Time and Time periods
Time and times of the day.
Weekdays, months, seasons.
Adverbs of time and time related prepositions

Module II: Irregular verbs
Introduction to irregular verbs like to be, and others, to learn the conjugations of the same, (fahren, essen, lessen, schlafen, sprechen und ähnliche).

Module III: Separable verbs
To comprehend the change in meaning that the verbs undergo when used as such
Treatment of such verbs with separable prefixes

Module IV: Reading and comprehension
Reading and deciphering railway schedules/school time table
Usage of separable verbs in the above context

Module V: Accusative case
Accusative case with the relevant articles
Introduction to 2 different kinds of sentences – Nominative and Accusative

Module VI: Accusative personal pronouns
Nominative and accusative in comparison
Emphasizing on the universal applicability of the pronouns to both persons and objects

Module VII: Accusative prepositions
Accusative prepositions with their use
Both theoretical and figurative use

Module VIII: Dialogues
Dialogue reading: ‘In the market place’
‘At the Hotel’

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Wolfgang Hieber, Lernziel Deutsch
- Hans-Heinrich Wangler, Sprachkurs Deutsch
- Schulz Griesbach, Deutsche Sprachlehre für Ausländer
- P.L Aneja, Deutsch Interessant- 1, 2 & 3
- Rosa-Maria Dallapienza et al, Tangram Aktuell A1/1,2
- Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs
SPANISH – II

Course Code: BMB 246  Credit Units: 02

Course Objective:
To enable students acquire more vocabulary, grammar, Verbal Phrases to understand simple texts and start describing any person or object in Simple Present Tense.

Course Contents:

Module I
Revision of earlier modules.

Module II
Some more AR/ER/IR verbs. Introduction to root changing and irregular AR/ER/IR ending verbs

Module III
More verbal phrases (eg, Dios Mio, Que lastima etc), adverbs (bueno/malo, muy, mucho, bastante, poco).
Simple texts based on grammar and vocabulary done in earlier modules.

Module IV
Possessive pronouns

Module V
Writing/speaking essays like my friend, my house, my school/institution, myself….descriptions of people, objects etc, computer/internet related vocabulary

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Español, En Directo I A
- Español Sin Fronteras
Course Objective:
To enable the students to converse in the language with the help of basic particles and be able to define the situations and people using different adjectives.

Course Contents:

Module I: Verbs
Transitive verbs, intransitive verbs

Module II: More prepositions
More particles, articles and likes and dislikes.

Module III: Terms used for instructions
No parking, no smoking etc.

Module IV: Adverbs
Different adverbial expression.

Module V: Invitations and celebrations
Giving and receiving presents,
Inviting somebody for lunch, dinner, movie and how to accept and refuse in different ways

Module VI: Comprehension’s
Short essay on Family, Friend etc.

Module VII: Conversations
Situational conversations like asking the way, At a post office, family

Module VIII: Illness
Going to the doctor, hospital etc.

Learning Outcome
➢ Students can speak the language describing above-mentioned topics.

Methods of Private study /Self help
➢ Handouts, audio-aids, and self-do assignments.
➢ Use of library, visiting and watching movies in Japan and culture center every Friday at 6pm.

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

Text:
➢ Teach yourself Japanese

References:
➢ Shin Nihongo no kiso 1
CHINESE – II

Course Code: BMB 248 Credit Units: 02

Course Objective:
Chinese is a tonal language where each syllable in isolation has its definite tone (flat, falling, rising and rising/falling), and same syllables with different tones mean different things. When you say, “ma” with a third tone, it mean horse and “ma” with the first tone is Mother. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

Course Contents:

Module I
Drills
Practice reading aloud
Observe Picture and answer the question.
Tone practice.
Practice using the language both by speaking and by taking notes.
Introduction of basic sentence patterns.
Measure words.
Glad to meet you.

Module II
Where do you live?
Learning different colors.
Tones of “bu”
Buying things and how much it costs?
Dialogue on change of Money.
More sentence patterns on Days and Weekdays.
How to tell time. Saying the units of time in Chinese. Learning to say useful phrases like – 8:00, 11:25, 10:30 P.M. everyday, afternoon, evening, night, morning 3:58, one hour, to begin, to end ….. etc.
Morning, Afternoon, Evening, Night.

Module III
Use of words of location like-li, wais hang, xia
Furniture – table, chair, bed, bookshelf... etc.
Description of room, house or hostel room.. eg what is placed where and how many things are there in it?
Review Lessons – Preview Lessons.
Expression “yao”, “xiang” and “yaoshi” (if).
Days of week, months in a year etc.
I am learning Chinese. Is Chinese difficult?

Module IV
Counting from 1-1000
Use of “chang-chang”.
Making an Inquiry – What time is it now? Where is the Post Office?
Days of the week. Months in a year.
Use of Preposition – “zai”, “gen”.
Use of interrogative pronoun – “duoshao” and “ji”.
“Whose”??? Sweater etc is it?
Different Games and going out for exercise in the morning.

Module V
The verb “qu”
– Going to the library issuing a book from the library
– Going to the cinema hall, buying tickets
– Going to the post office, buying stamps
– Going to the market to buy things.. etc
– Going to the buy clothes …. Etc.
Hobby. I also like swimming.
Comprehension and answer questions based on it.
Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- “Elementary Chinese Reader Part I” Lesson 11-20
INSTRUMENTATION AND ANALYTICAL TECHNIQUES - II

Course Code: BMB 301 Credit Units: 03

Course Objective:
This course is meant for the basic techniques applied in different biological field which are needed for latest ongoing research work in different parts of biotechnology.

Course Contents:

Module I: Skills in Microbiology
Sterilization, culturing and staining procedures, Enumeration of micro-organisms using colony counter, Serial dilution and phage counts, Identification of micro-organisms through appropriate techniques, Principles of electron microscopy

Module II: Skills in protein purification
Assay methods for protein determination, Isolation and separation techniques, Purity check by SDS-PAGE and molecular markers.

Module III: Skills in protein analysis
Assay of enzyme activity using appropriate techniques, Measurement of kinetic properties of enzymes.

Module IV: Biological data handling
Use of Minitab for the analysis of biological data with special reference to statistical significance of differences.

Examination Scheme:

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</table>

Text & References:

Text:
- Analytical Biochemistry (3rd ed) by D.J. Holme, and H. Peck. Publisher: Longman
- Microbiology: A laboratory manual by J.G. Cappuccino and N. Sherman. Publisher: Benjamin-Cummings

References:
- Practical Skills in biology by A. Jones, R. Read and J. Weyers
- Protein Purification Methods; a practical Approach by E.L.V. Harris, and S. Angal. Publisher: IRL Press at Oxford University Press.
- Statistical and Data Handling Skill in Biology by R. Ennos. Publisher Printice Hall
ANIMAL CELL BIOLOGY

Course Code: BMB 302      Credit Units: 03

Course Objective:
This course is meant for the basic understanding about different cell types, their basic mechanism with particular emphasis on cell proliferation and differentiation.

Course Contents:

Module I: Cell types
Cellular differentiation, Stem cells and their importance,

Module II
Regulation of cell proliferation – normal Vs abnormal cell cycle, Growth factors and transmembrane Signaling, Oncogene expression, Telomere replication, Apoptosis

Module III: Cell Culture
Basic techniques of culturing cells, Characteristics of various cell lines, Preservation and maintenance of animal cell lines.

Module IV
Bioreactors for large scale culture of cells, applications of animal cell/tissue culture.

Examination Scheme:

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</table>

Text & References:

Text:
- Culture of Animal Cells, Manual of Basic Techniques by R. I Freshney. Publisher : Allan R. Liss

References:
- The World of the cell  by Becker et al. Publisher : Addison Wesley, Longman
Course Code: BMB 303  Credit Units: 03

Course Objective:
It aims to provide a basis for understanding a range of physiological processes including gastrointestinal, endocrine and renal system as specified in the syllabus

Course Contents:

Module I: Regulatory Physiology
Chemical messengers (primary and secondary), Receptors and intranuclear signaling events, Agonists-endocrine, paracrine and autocrine

Module II: Endocrine Physiology
Hypothalamo-hypophysial complex and its significance, Major hormones of adrenal, thyroid, pancreas, gonads, pineal glands and their respective roles, Hormone assay procedures (Elisa, RRA,RIA etc).

Module III: Gastrointestinal Physiology
Structure and enzymes of gastrointestinal tract, astrointestinal hormones, Functions of the liver and pancreas, Regulation of digestive and absorptive processes.

Module IV: Renal Physiology
Structure and function of renal system, Ultrafiltration and formation of urine, Control of renal functioning and regulation of body fluids.

Examination Scheme:

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Text & References:

Text:

References:
- Human physiology: the Basis of Medicine by G. Pocock, C.D> Richards. Publisher Ofxord
PROFESSIONAL STUDIES FOR BIOMEDICAL SCIENCES

Course Code: BMB 304
Credit Units: 03

Course Objective:
It aims to develop an understanding of good laboratory management and practice, the internal structure, aims legal standing, career structure and professional development opportunities within the area of biomedical sciences.

Course Contents:

Module I
Activities of biomedical science institutes and professional bodies

Module II
Health and safety issues pertinent to biomedical sciences and clinical trials.

Module III
The statutory and legal obligations of biomedical R &D Organizations.

Module IV
Private-Public initiatives and collaboration in biomedical sciences – biotechnology parks.

Module V
Career prospects and research opportunities in Biomedical enterprises.

Examination Scheme:

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Text & References:
- Literature from relevant companies /organizations, www sites etc.
BIOCHEMISTRY- II

Course Code: BMB 305 Credit Units: 03

Course Objective:
To develop an understanding of central metabolic processes and the role of enzymes in modulating its pathways.

Course Contents:

Module I
Metabolic roles of molecules such as AMP, ADP, ATP and NADH

Module II
Nature of enzyme activity, its specificity and significance of $K_m$ and $V_m$.

Module III
Central pathways including inter-dependence and control of carbohydrate and lipid metabolism glycolysis, $\beta$-oxidation, TCA cycle and gluconeogenesis.

Module IV
An introduction to amino acid metabolism

Module V
ATP generation by oxidative and substrate phosphorylation

Examination Scheme:

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</table>

Text & References:

Text:
- Biochemistry by Voet & Voet. Publisher: Freeman.
- Biochemistry by L. Stryer. Publisher: Freeman

References:
- Human Metabolism by R. Bronk. Publisher: Addison Wesley.
ANIMAL CELL BIOLOGY LAB

Course Code: BMB 320      Credit Units: 02

Course Objective:
This course is meant for the basic understanding about different cell types, their basic mechanism with particular emphasis on cell proliferation and differentiation.

Course Contents:

Module I
Cell culture: Basic techniques of culturing cells- Preparation of media,

Module II
Storage and maintenance of cell line.

Examination Scheme:

<table>
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<th>IA</th>
<th>Class Test (Practical Based)</th>
<th>Mid Term Viva</th>
<th>Attendance</th>
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PROFESSIONAL STUDIES FOR BIOMEDICAL SCIENCES LAB

Course Code: BMB 321
Credit Units: 02

Course Objective:
It aims to develop an understanding of good laboratory management and practice, the internal structure, aims legal standing, career structure and professional development opportunities within the area of biomedical sciences.

Course Contents:

Module I
Health and safety issues pertinent to biomedical sciences

Module II
Clinical trials.

Examination Scheme:

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Course Objective:
To develop an understanding of central metabolic processes and the role of enzymes in modulating its pathways.

Course Contents:

Module I
Enzyme Assays

Module II
Cholesterol estimation in blood

Module III
Identification of amino acid

Examination Scheme:

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COMMUNICATION SKILLS - I

Course Code: BMB 341      Credit Units: 01

Course Objective:
To form written communication strategies necessary in the workplace

Course Contents:
Module I: Introduction to Writing Skills
Effective Writing Skills
Avoiding Common Errors
Paragraph Writing
Note Taking
Writing Assignments

Module II: Letter Writing
Types
Formats

Module III
Memo
Agenda and Minutes
Notice and Circulars

Module IV: Report Writing
Purpose and Scope of a Report
Fundamental Principles of Report Writing
Project Report Writing
Summer Internship Reports

Examination Scheme:

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</table>

CAF – Communication Assessment File
GD – Group Discussion
GP – Group Presentation

Text & References:

- Business Communication, Raman –Prakash, Oxford
- Creative English for Communication, Krishnaswamy N, Macmillan
- Textbook of Business Communication, Ramaswami S, Macmillan
- Working in English, Jones, Cambridge
- Effective Writing, Withrow, Cambridge
- Writing Skills, Coe/Rycroft/Ernest, Cambridge
- Welcome!, Jones, Cambridge
BEHAVIOURAL SCIENCE - III
(INTERPERSONAL COMMUNICATION)

Course Code: BMB 343 Credit Units: 01

Course Objective:
This course provides practical guidance on
- Enhancing personal effectiveness and performance through effective interpersonal communication
- Enhancing their conflict management and negotiation skills

Course Contents:

Module I: Interpersonal Communication: An Introduction
Importance of Interpersonal Communication
Types – Self and Other Oriented
Rapport Building – NLP, Communication Mode
Steps to improve Interpersonal Communication

Module II: Behavioural Communication
Meaning and Nature of behavioural communication
Persuasion, Influence, Listening and Questioning
Guidelines for developing Human Communication skills
Relevance of Behavioural Communication for personal and professional development

Module III: Interpersonal Styles
Transactional Analysis
Life Position/Script Analysis
Games Analysis
Interactional and Transactional Styles

Module IV: Conflict Management
Meaning and nature of conflicts
Styles and techniques of conflict management
Conflict management and interpersonal communication

Module V: Negotiation Skills
Meaning and Negotiation approaches (Traditional and Contemporary)
Process and strategies of negotiations
Negotiation and interpersonal communication

Module VI: End-of-Semester Appraisal
Viva based on personal journal
Assessment of Behavioural change as a result of training
Exit Level Rating by Self and Observer

Text & References:
- Julia T. Wood. Interpersonal Communication everyday encounter
- Harvard Business School, Effective Communication: United States of America
- Foster John, Effective Writing Skills: Volume-7, First Edition 2000, Institute of Public Relations (IPR)
- Beebe, Beebe and Redmond; Interpersonal Communication, 1996; Allyn and Bacon Publishers.
Course Code: BMB 344      Credit Units: 02

Course Objective:
To provide the students with the know-how
• To master the current social communication skills in oral and in written.
• To enrich the formulations, the linguistic tools and vary the sentence construction without repetition.

Course Contents:

Module B: pp. 76 – 88 Unité 6
Module C: pp. 89 to103 Unité 7

Contenu lexical:

Unité 6: se faire plaisir
1. acheter : exprimer ses choix, décrire un objet (forme, dimension, poids et matières) payer
2. parler de la nourriture, deux façons d’exprimer la quantité, commander un repas au restaurant
3. parler des différentes occasions de faire la fête

Unité 7: Cultiver ses relations
1. maîtriser les actes de la communication sociale courante (Salutations, présentations, invitations, remerciements)
2. annoncer un événement, exprimer un souhait, remercier, s’excuser par écrit.
3. caractériser une personne (aspect physique et caractère)

Contenu grammatical:

1. accord des adjectifs qualificatifs
2. articles partitifs
3. Négations avec de, ne…rien/personne/plus
4. Questions avec combien, quel…
5. expressions de la quantité
6. ne…plus/toujours - encore
7. pronoms compléments directs et indirects
8. accord du participe passé (auxiliaire « avoir ») avec l’objet direct
9. Impératif avec un pronom complément direct ou indirect
10. construction avec « que » - Je crois que/ Je pense que/ Je sais que

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:
• le livre à suivre : Campus: Tome 1
Course Objective:
To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.
To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany

Course Contents:

Module I: Modal verbs
Modal verbs with conjugations and usage
Imparting the finer nuances of the language

Module II: Information about Germany (ongoing)
Information about Germany in the form of presentations or “Referat” – neighbors, states and capitals, important cities and towns and characteristic features of the same, and also a few other topics related to Germany.

Module III: Dative case
Dative case, comparison with accusative case
Dative case with the relevant articles
Introduction to 3 different kinds of sentences – nominative, accusative and dative

Module IV: Dative personal pronouns
Nominative, accusative and dative pronouns in comparison

Module V: Dative prepositions
Dative preposition with their usage both theoretical and figurative use

Module VI: Dialogues
In the Restaurant,
At the Tourist Information Office,
A telephone conversation

Module VII: Directions
Names of the directions
Asking and telling the directions with the help of a roadmap

Module VIII: Conjunctions
To assimilate the knowledge of the conjunctions learnt indirectly so far

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Wolfgang Hieber, Lernziel Deutsch
- Hans-Heinrich Wangler, Sprachkurs Deutsch
- Schulz Griesbach, Deutsche Sprachlehre für Ausländer
- P.L Aneja, Deutsch Interessant - 1, 2 & 3
- Rosa-Maria Dallapienza et al, Tangram Aktuell A1/1,2
- Braun, Nider, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs
SPANISH – III

Course Code: BMB 346    Credit Units: 02

Course Objective:
To enable students acquire knowledge of the Set/definite expressions (idiomatic expressions) in Spanish language and to handle some Spanish situations with ease.

Course Contents:

Module I
Revision of earlier semester modules
Set expressions (idiomatic expressions) with the verb Tener, Poner, Ir….
Weather

Module II
Introduction to Gustar…and all its forms. Revision of Gustar and usage of it

Module III
Translation of Spanish-English; English-Spanish. Practice sentences.
How to ask for directions (using estar)
Introduction to IR + A + INFINITIVE FORM OF A VERB

Module IV
Simple conversation with help of texts and vocabulary
En el restaurante
En el instituto
En el aeropuerto

Module V
Reflexives

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Español, En Directo I A
- Español Sin Fronteras -Nivel Elemental
Course Objective:
To enable the students to converse in the language with the help of basic verbs and to express themselves effectively and narrate their everyday short encounters. Students are also given projects on Japan and Japanese culture to widen their horizon further.
Note: The Japanese script is introduced in this semester.

Course Contents:

Module I: Verbs
Different forms of verbs: present continuous verbs etc

Module II
More Adverbs and adverbial expressions

Module III: Counters
Learning to count different shaped objects,

Module IV: Tenses
Past tense, Past continuous tense.

Module V: Comparison
Comparative and Superlative degree

Module VI: Wishes and desires
Expressing desire to buy, hold, possess. Usage in negative sentences as well. Comparative degree, Superlative degree.

Module VII: Appointment
Over phone, formal and informal etc.

Learning Outcome
➢ Students can speak the language and can describe themselves and situations effectively
➢ They also gain great knowledge in terms of Japanese lifestyle and culture, which help them at the time of placements.

Methods of Private study /Self help
➢ Handouts, audio-aids, and self-do assignments.
➢ Use of library, visiting and watching movies in Japan and culture center every Friday at 6pm.

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

Text:
➢ Teach yourself Japanese

References:
➢ Shin Nihongo no kiso 1
Course Objective:
Foreign words are usually imported by translating the concept into Chinese, the emphasis is on the meaning rather than the sound. But the system runs into a problem because the underlying name of personal name is often obscure so they are almost always transcribed according to their pronunciation alone. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

Course Contents:

Module I
Drills
Dialogue practice
Observe picture and answer the question.
Introduction of written characters.
Practice reading aloud
Practice using the language both by speaking and by taking notes.
Character writing and stroke order

Module II
Measure words
Position words e.g. inside, outside, middle, in front, behind, top, bottom, side, left, right, straight.
Directional words – beibian, xibian, nanbian, dongbian, zhongjian.
Our school and its different building locations.
What game do you like?
Difference between “hii” and “neng”, “keyi”.

Module III
Changing affirmative sentences to negative ones and vice versa
Human body parts.
Not feeling well words e.g. ; fever, cold, stomach ache, head ache.
Use of the modal particle “le”
Making a telephone call
Use of “jiu” and “cal” (Grammar portion)
Automobiles e.g. Bus, train, boat, car, bike etc.
Traveling, by train, by airplane, by bus, on the bike, by boat.. etc.

Module IV
The ordinal number “di”
“Mei” the demonstrative pronoun e.g. mei tian, mei nian etc.
use of to enter to exit
Structural particle “de” (Compliment of degree).
Going to the Park.
Description about class schedule during a week in school.
Grammar use of “li” and “cong”.
Comprehension reading followed by questions.

Module V
Persuasion-Please don’t smoke.
Please speak slowly
Praise – This pictorial is very beautiful
Opposites e.g. Clean-Dirty, Little-More, Old-New, Young-Old, Easy-Difficult, Boy-Girl, Black-White, Big-Small, Slow-Fast … etc.
Talking about studies and classmates
Use of “it doesn’t matter”
Enquiring about a student, description about study method.
Grammar: Negation of a sentence with a verbal predicate.
Examination Scheme:

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C – Project + Presentation  
I – Interaction/Conversation Practice

Text & References:

- “Elementary Chinese Reader Part I, Part-2” Lesson 21-30
**TERM PAPER - I**

**Course Code:** BMB 330  
**Credit Units:** 03

A term (or research) paper is primarily a record of intelligent reading in several sources on a particular subject. The students will choose the topic at the beginning of the session in consultation with the faculty assigned. The progress of the paper will be monitored regularly by the faculty. At the end of the semester the detailed paper on the topic will be submitted to the faculty assigned. The evaluation will be done by Board of examiners comprising of the faculties.

**GUIDELINES FOR TERM PAPER**

The procedure for writing a term paper may consist of the following steps:

1. Choosing a subject
2. Finding sources of materials
3. Collecting the notes
4. Outlining the paper
5. Writing the first draft
6. Editing & preparing the final paper

**1. Choosing a Subject**

The subject chosen should not be too general.

**2. Finding Sources of materials**

a) The material sources should be not more than 10 years old unless the nature of the paper is such that it involves examining older writings from a historical point of view.

b) Begin by making a list of subject-headings under which you might expect the subject to be listed.

c) The sources could be books and magazine articles, news stories, periodicals, scientific journals etc.

**3. Collecting the notes**

Skim through sources, locating the useful material, then make good notes of it, including quotes and information for footnotes.

a) Get facts, not just opinions. Compare the facts with author's conclusion.

b) In research studies, notice the methods and procedures, results & conclusions.

c) Check cross references.

**4. Outlining the paper**

a) Review notes to find main sub-divisions of the subject.

b) Sort the collected material again under each main division to find sub-sections for outline so that it begins to look more coherent and takes on a definite structure. If it does not, try going back and sorting again for main divisions, to see if another general pattern is possible.

**5. Writing the first draft**

Write the paper around the outline, being sure that you indicate in the first part of the paper what its purpose is. You may follow the following:

a) statement of purpose

b) main body of the paper

c) statement of summary and conclusion

Avoid short, bumpy sentences and long straggling sentences with more than one main idea.

**6. Editing & Preparing the final Paper**

a) Before writing a term paper, you should ensure you have a question which you attempt to answer in your paper. This question should be kept in mind throughout the paper. Include only information/ details/ analyses of relevance to the question at hand. Sometimes, the relevance of a particular section may be clear to you but not to your readers. To avoid this, ensure you briefly explain the relevance of every section.

b) Read the paper to ensure that the language is not awkward, and that it "flows" properly.

c) Check for proper spelling, phrasing and sentence construction.

d) Check for proper form on footnotes, quotes, and punctuation.

e) Check to see that quotations serve one of the following purposes:
   (i) Show evidence of what an author has said.
   (ii) Avoid misrepresentation through restatement.
   (iii) Save unnecessary writing when ideas have been well expressed by the original author.

f) Check for proper form on tables and graphs. Be certain that any table or graph is self-explanatory.

Term papers should be composed of the following sections:
Generally, the introduction, discussion, conclusion and bibliography part should account for a third of the paper and the review part should be two thirds of the paper.

**Discussion**
The discussion section either follows the results or may alternatively be integrated in the results section. The section should consist of a discussion of the results of the study focusing on the question posed in the research paper.

**Conclusion**
The conclusion is often thought of as the easiest part of the paper but should by no means be disregarded. There are a number of key components which should not be omitted. These include:

a) summary of question posed  
b) summary of findings  
c) summary of main limitations of the study at hand  
d) details of possibilities for related future research

**Reference**
From the very beginning of a research project, you should be careful to note all details of articles gathered. The bibliography should contain ALL references included in the paper. References not included in the text in any form should NOT be included in the bibliography. The key to a good bibliography is consistency. Choose a particular convention and stick to this.

**Conventions**

Monographs

Edited volumes
[(eds.) is used when there is more than one editor; and (ed.) where there is only one editor. In German the abbreviation used is (Hrsg.) for Herausgeber].

Edited articles

Journal articles

Electronic book

Electronic journal articles

Other websites

Unpublished papers
Unpublished theses/dissertations

Appendix
The appendix should be used for data collected (e.g. questionnaires, transcripts, ...) and for tables and graphs not included in the main text due to their subsidiary nature or to space constraints in the main text.

Assessment Scheme:

Continuous Evaluation 40%
(Based on abstract writing, interim draft, general approach, research orientation, readings undertaken etc.)

Final Evaluation 60%
(Based on the organization of the paper, objectives/problem profile/issue outlining, comprehensiveness of the research, flow of the idea/ideas, relevance of material used/presented, outcomes vs. objectives, presentation/viva etc.)
Course Objective:
The aim is to enable students to acquire and demonstrate competence in gathering and utilizing electronic information.

Course Contents:

Module I: Introduction to Bioinformatics. History of Bioinformatics

Module II: Bioinformatics Fundamentals

Module III
The human genome project and its implications in human disease analysis and management, Analysing data from epidemiological studies and surveys with respect to the causes and treatment of human disease.

Examination Scheme:

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Text & References:

- Essentials of Genomics and Bioinformatics by C.W. Sensen, John Wiley and Sons
- Bioinformatics: Sequence and Genome Analysis by D.W. Mount, Cold Spring Harbor Laboratory Press.
- Practical skill in biology by A. Jones et al. Publisher :Longmans
- Introduction to bioinformatics by T.K. Attwood and D.J. Parry-Smith. Publisher : Longmans
MICROBIAL PHYSIOLOGY

Course Code:  BMB 402  
Credit Units: 03

Course Objective:
To develop an understanding of modern concepts of microbial physiology.

Course Contents:

Module I
Form, function and ultrastructure of microorganisms,

Module II
Culturing microorganisms,

Module III
Microbial growth and differentiation,

Module IV
Locomotion capsulation and survival mechanisms of microbes,

Module V
Autotrophic and heterotrophic microbial metabolism,

Module VI
Fermentation, Microbes in health and disease.

Examination Scheme:

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Text & References:

Text:
- Microbial Physiology by I.W. Dawes and Sutherland. Publisher: Blackwell
- Foundations in Microbiology by K. Talaro & A. Talaro. Publisher: WBC

References:
- The World of the Cell by Becker et al.
- Microbial Physiology and Metabolism Meijer. Progress in cell cycle research by D.R. Caldwell
**Course Objective:**
To provide an understanding of the mechanisms via which genetic information is stored. To provide an introduction to the principles and practice of recombinant DNA technology.

**Course Contents:**

**MOLECULAR BIOLOGY**

**Module I: DNA**
Structure and form of DNA
Enzymology of DNA replication in prokaryotes and eukaryotes (outline)

**Module II: Genetic Code**
Fundamental features.

**Module III: Transcription**
Mechanisms and enzymology in prokaryotes and eukaryotes.

**Module IV: Translation**
Molecular events at the ribosome and information regarding coding-decoding system.

**GENETIC ENGINEERING**

**Module V**
Mechanisms of gene transfer, Production of transgenic organisms,

**Module VI**
Introduction to cloning vectors in prokaryotes and eukaryotes,

**Module VII**
Use of DNA restriction and modification enzymes,

**Module VIII**
Methods of selection and screening for recombinant DNA, PCR methodologies.

**Examination Scheme:**

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</table>

**Text & References:**

**Text:**

**References:**
- Techniques for Engineering Genes by K.M.A. Gartland. Publisher: Butterworth Heinemann
IMMUNOLOGY - I

Course Code: BMB 404 Credit Units: 03

Course Objective:
To develop an understanding of the functional components of the immune and the in vitro uses of antibodies.

Course Contents:

Module I
Organs, tissues, cells and molecules of the immune system

Module II
Defence mechanisms -humoral and cell mediated immunity

Module III
Types of antibodies and the genetic basis of their production,

Module IV
Antibodies as molecular probes and production of monoclonal antibodies,

Module V
Immunocompetency – active and passive immunity.

Examination Scheme:

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Text & References:

Text:
- Essential Immunology by I. Roitt. Publisher: Blackwell, Oxfot

References:
ENZYME TECHNOLOGY

Course Code: BMB 405      Credit Units: 04

Course Objective:
The aim of this course is to provide an understanding of the principles & applications of protein and enzyme biochemistry in the field of biomedical sciences.

Course Contents:

Module I: Protein Biochemistry
Protein folding, Posttranslational modification, Protein turnover and targeting,

Module II
Analysis of protein structure, Production of therapeutic proteins from recombinant sources.

Module III: Enzymology
Enzyme inhibitors, Enzyme inhibitors as therapeutics, Diagnostic testing using enzyme activity

Examination Scheme:

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Text & References:

Text:
- Fundamental of Biochemistry by D. Voet, J.G. Voet, C.W. Pratt. Publisher: Wiley

References:
- Biochemistry by D. Voet, J.G. Voet. Publisher: Wiley
- Biochemistry by L. Stryer. Publisher: Freeman
MICROBIAL PHYSIOLOGY LAB

Course Code: BMB 420  Credit Units: 02

Course Objective:
To provide an understanding of the mechanisms via which genetic information is stores. To provide an introduction to the principles and practice of recombinant DNA technology

Course Contents:

Module I
Function and ultrastructure of Bacteria, virus and protozoa.

Module II
Culturing microorganisms from soil and water.

Module III
Microbial growth – estimation of growth curve of E-coli.

Module IV
Capsule staining.

Examination Scheme:

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MOLECULAR BIOLOGY AND GENETIC ENGINEERING LAB

Course Code: BMB 421      Credit Units: 02

Course Objective:
To provide an understanding of the mechanisms via which genetic information is stores. To provide an introduction to the principles and practice of recombinant DNA technology.

Course Contents:

MOLECULAR BIOLOGY

Module I
Isolation of plasmid DNA and

Module II
Restriction Enzyme.

GENETIC ENGINEERING

Module III
Preparation of competent cells and ligation

Module IV
PCR methodologies.
This session will enable the students to practically apply their knowledge gained from their paper Molecular Biology & Genetic Engineering.

Examination Scheme:

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IMMUNOLOGY – I AND ENZYME TECHNOLOGY LAB

Course Code: BMB 422      Credit Units: 02

Course Objective:
To develop an understanding of the functional components of the immune and the *in vitro* uses of antibodies and also the principles & applications of protein and enzyme biochemistry in the field of biomedical sciences.

Course Contents:

**Module I**  
Lymphocyte preparation, thymocytes preparation

**Module II**  
Immunodiffusion, Microscopic view of lymphatic organ

**Module III**  
Cytokines estimation through ELISA methods

**Module IV**  
Protein estimation and expression study

Examination Scheme:

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COMMUNICATION SKILLS - II

Course Code: BMB 441
Credit Units: 01

Course Objective:
To teach the participants strategies for improving academic reading and writing.
Emphasis is placed on increasing fluency, deepening vocabulary, and refining academic language proficiency.

Course Contents:

Module I: Social Communication Skills
Small Talk
Conversational English
Appropriateness
Building rapport

Module II: Context Based Speaking
In general situations
In specific professional situations
Discussion and associated vocabulary
Simulations/Role Play

Module III: Professional Skills
Presentations
Negotiations
Meetings
Telephony Skills

Examination Scheme:

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CAF – Communication Assessment File
GD – Group Discussion
GP – Group Presentation

Text & References:
- Essential Telephoning in English, Garside/Garside, Cambridge
- Working in English, Jones, Cambridge
- Business Communication, Raman –Prakash, Oxford
- Speaking Personally, Porter-Ladousse, Cambridge
- Speaking Effectively, Jermy Comfort, et.al, Cambridge
- Business Communication, Raman –Prakash, Oxford
BEHAVIOURAL SCIENCE - IV
(RELATIONSHIP MANAGEMENT)

Course Code: BMB 443  Credit Units: 01

Course Objective:
To understand the basis of interpersonal relationship
To understand various communication style
To learn the strategies for effective interpersonal relationship

Course Contents:

Module I: Understanding Relationships
Importance of relationships
Role and relationships
Maintaining healthy relationships

Module II: Bridging Individual Differences
Understanding individual differences
Bridging differences in Interpersonal Relationship – TA
Communication Styles

Module III: Interpersonal Relationship Development
Importance of Interpersonal Relationships
Interpersonal Relationships Skills
Types of Interpersonal Relationships

Module IV: Theories of Interpersonal Relationships
Theories: Social Exchange, Uncertainty Reduction Theory
Factors Affecting Interpersonal Relationships
Improving Interpersonal Relationships

Module V: Impression Management
Meaning & Components of Impression Management
Impression Management Techniques (Influencing Skills)
Impression Management Training-Self help and Formal approaches

Module VI: End-of-Semester Appraisal
Viva based on personal journal
Assessment of Behavioural change as a result of training
Exit Level Rating by Self and Observer

Text & References:
- Julia T. Wood. Interpersonal Communication everyday encounter
- Harvard Business School, Effective Communication: United States of America
- Foster John, Effective Writing Skills: Volume-7, First Edition 2000, Institute of Public Relations (IPR)
- Beebe, Beebe and Redmond; Interpersonal Communication, 1996; Allyn and Bacon Publishers.
Course Code: BMB 444  Credit Units: 02

Course Objective:
To enable students:
• To develop strategies of comprehension of texts of different origin
• To present facts, projects, plans with precision

Course Contents:
Module C: pp. 104 – 139: Unités 8, 9

Contenu lexical: Unité 8: Découvrir le passé
1. parler du passé, des habitudes et des changements.
2. parler de la famille, raconter une suite
3. d’événements/préciser leur date et leur durée.
4. connaître quelques moments de l’histoire

Unité 9: Entreprendre
1. faire un projet de la réalisation: (exprimer un besoin, préciser les étapes d’une réalisation)
2. parler d’une entreprise
3. parler du futur

Contenu grammatical: 1. Imparfait
2. Pronom « en »
3. Futur
4. Discours rapporté au présent
5. Passé récent
6. Présent progressif

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:
• le livre à suivre : Campus: Tome 1
GERMAN - IV

Course Code: BMB 445      Credit Units: 02

Course Objective:
To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.
To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany.
Introduction to Advanced Grammar Language and Professional Jargon

Course Contents:

Module I: Present perfect tense
Present perfect tense, usage and applicability
Usage of this tense to indicate near past
Universal applicability of this tense in German

Module II: Letter writing
To acquaint the students with the form of writing informal letters.

Module III: Interchanging prepositions
Usage of prepositions with both accusative and dative cases
Usage of verbs fixed with prepositions
Emphasizing on the action and position factor

Module IV: Past tense
Introduction to simple past tense
Learning the verb forms in past tense
Making a list of all verbs in the past tense and the participle forms

Module V: Reading a Fairy Tale
Comprehension and narration
  Rotkäppchen
  Froschprinzessin
  Die Fremdsprache

Module VI: Genitive case
Genitive case – Explain the concept of possession in genitive
Mentioning the structure of weak nouns

Module VII: Genitive prepositions
Discuss the genitive propositions and their usage: (während, wegen, statt, trotz)

Module VIII: Picture Description
Firstly recognize the persons or things in the picture and identify the situation depicted in the picture;
Secondly answer questions of general meaning in context to the picture and also talk about the personal experiences which come to your mind upon seeing the picture.

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Wolfgang Hieber, Lernziel Deutsch
- Hans-Heinrich Wangler, Sprachkurs Deutsch
- Schulz Griesbach, Deutsche Sprachlehre für Ausländer
- P.I. Aneja, Deutsch Interessant- 1, 2 & 3
- Rosa-Maria Dallapiiazza et al, Tangram Aktuell A1/1,2
- Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs
SPANISH - IV

Course Code: BMB 446    Credit Units: 02

Course Objective:
To enable students acquire working knowledge of the language; to give them vocabulary, grammar, voice modulations/intonations to handle everyday Spanish situations with ease.

Course Contents:

Module I
Revision of earlier semester modules
Introduction to Present Continuous Tense (Gerunds)

Module II
Translation with Present Continuous Tense
Introduction to Gustar, Parecer, Apetecer, doler

Module III
Imperatives (positive and negative commands of regular verbs)

Module IV
Commercial/business vocabulary

Module V
Simple conversation with help of texts and vocabulary
En la recepcion del hotel
En el restaurante
En la agencia de viajes
En la tienda/supermercado

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Español Sin Fronteras (Nivel – Elemental)
Course Code: BMB 447      Credit Units: 02

Course Objective:
To enable the students to comfortably interact using basic Japanese.
Note: Teaching is done in roman as well as Japanese script, students will be taught katankana (another form of script) in this semester i.e. to be able to write all the foreign words in Japanese.

Course Contents:

Module I
Comparison using adjectives, making requests

Module II
Seeking permission

Module III
Practice of conversations on:
Visiting people, Party, Meetings, after work, at a ticket vending machine etc

Module IV
Essays, writing formal letters

Learning Outcome
➢ Students can speak the language describing above-mentioned topics.

Methods of Private study /Self help
➢ Handouts, audio-aids, and self-do assignments, role-plays.
➢ Students are also encouraged to attend Japanese film festival and other such fairs and workshops organized in the capital from time to time.

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

Text:
• Teach yourself Japanese

References:
• Shin Nihongo no kiso 1
Course Objective:
How many characters are there? The early Qing dynasty dictionary included nearly 50,000 characters the vast majority of which were rare accumulated characters over the centuries. An educate person in China can probably recognize around 6000 characters. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

Course Contents:

Module I
Dialogue Practice
Observe picture and answer the question
Pronunciation and intonation
Character writing and stroke order.
Electronic items

Module II
Traveling – The Scenery is very beautiful
Weather and climate
Grammar question with – “bu shi …. Ma?”
The construction “yao … le” (Used to indicate that an action is going to take place)
Time words “yiqian”, “yiwai” (Before and after).
The adverb “geng”.

Module III
Going to a friend house for a visit meeting his family and talking about their customs.
Fallen sick and going to the Doctor, the doctor examines, takes temperature and writes prescription.
Aspect particle “guo” shows that an action has happened some time in the past.
Progressive aspect of an actin “zhengzai” Also the use if “zhe” with it.
To welcome someone and to see off someone …. I cant go the airport to see you off… etc.

Module IV
Shipment. Is this the place to checking luggage?
Basic dialogue on – Where do u work?
Basic dialogue on – This is my address
Basic dialogue on – I understand Chinese
Basic dialogue on – What job do u do?
Basic dialogue on – What time is it now?

Module V
Basic dialogue on – What day (date) is it today?
Basic dialogue on – What is the weather like here.
Basic dialogue on – Do u like Chinese food?
Basic dialogue on – I am planning to go to China.

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- “Elementary Chinese Reader, Part-2” Lesson 31-38
Course Objective:
The aim of this course is to understand the essential aspects of producing a grant proposal and working knowledge of statistical analyses.

Course Contents:

Module I
Skills of statistical analysis of biological data.

Module II
Settings objectives and forming hypotheses.

Module III
Factors, levels, blocking and randomization—t-test, paired t-test and analysis of variance

Module IV
Written and verbal presentation of research grant proposal—participation in group evaluation of all such proposals.
(Note: This exercise will include application of information skills, such as strategies and procedures for information retrievable, citation of references and compilation of bibliography)

Module V
Radioisotope handling skills- safety measure of storage and disposal.

Module VI
Liquid scintillation counting and queching—radioimmuneno assay—electrophesis and autoradiographic procedure.

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Text & References:

HAEMATOLOGY AND SEROLOGY

Course Code: BMB 502      Credit Units: 03

Course Objective:
The aim of this course is to understand the diseases of blood and the problems of its replacement.

Course Contents:

Module I
Haematology – red cell, white cell and platelet, transport protein.

Module II
Inherited and hemolytic anemia – malignant & other blood disorder: causes, diagnosis & prognosis

Module III
Blood Coagulation and its defect; Blood Transfusion and serology – blood groups (ABO, Rh and Lewis etc.)

Module IV
Blood collection from donors; Compatibility testing and transfusion hazard

Module V
Major blood constituents-preparation of reagents for analysis.

Examination Scheme:

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Text & References:

Text:

References:
Course Code: BMB 503  
Credit Units: 03

Course Objective:
To develop an awareness of cellular and molecular pathogenesis of major diseases of selected organs and systems.

Course Contents:

Module I
Basic principles such as structural and functional disturbances; signs, symptoms and syndromes investigative approaches and techniques.

Module II
Tissue types and characteristics – neoplasia – benign – malignant spectrum, Carcinogenesis – Characteristics of cancer cells – molecular basis of carcinogenesis

Module III
Injury and Inflammation-acute and chronic; pathogenesis and mediation

Module IV
Cellular and molecular processes of repair phenomena

Module V
Cell, adaptation and death – apoptosis, necrosis and adaptive tissue responses (e.g., metaplasia and dysphasia)

Module VI
Brief account of the diseases (etiology, pathogenesis and clinical aspects) of respiratory, muscular, gastrointestinal, liver, exocrine pancreas, kidney and the lower urinary tract

Examination Scheme:

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Text & References:

Text:

References:
MOLECULAR GENETICS

Course Code: BMB 504
Credit Units: 03

Course Objective:
To provide a detailed understanding of molecular control of gene expression in prokaryotes and eukaryotes and also the molecular techniques employed in recombinant DNA technology.

Course Contents:

Module I

Module II
Advanced Molecular biology techniques-DNA sequencing, restriction mapping, PCR and cloning techniques in plants and animals.

Module III
Characteristics and uses of host vector systems-expression vectors and expression of cloned genes

Module IV
Implications of recombinant DNA technology

Examination Scheme:

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Text & References:

Text:

References:
Course Objective:
To develop an understanding of role of biochemistry and molecular biology in the diagnosis and clinical management of disease.

Course Contents:

Module I
Organ function tests-water; electrolyte and acid-base balance—Disorders of carbohydrate and lipid metabolism.

Module II
Clinical significance of biochemical tests and their role in the diagnosis and monitoring of disease.

Module III
Role of pharmacological testing in clinical management of disease.

Module IV
Role of clinical biochemistry in detection, diagnosis and therapy of genetically inherited diseases and cancer.

Module V
Genetic disease, type of inheritance, single-gene and multifactorial inheritance, example of genetic diseases.

Module VI
Therapeutic intervention in blood disorder by stem cell transplantation/gene therapy.

Examination Scheme:

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Text & References:

Text:

References:
INSTRUMENTATION AND ANALYTICAL TECHNIQUES LAB - III

Course Code:  BMB 520      Credit Units: 02

Course Objective:
The aim of this course is to understand the essential aspects of producing a grant proposal and working
knowledge of statistical analyses.

Course Contents:

Module I
Skills of statistical analysis of biological data.

Module II
Settings objectives and forming hypotheses.

Module III
Factors, levels, blocking and randomization—‘T’-test, paired ‘T’ test and analysis of variance

Module IV
Written presentation of research grant proposal.

Examination Scheme:

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HAEMATOLOGY AND SEROLOGY LAB

Course Code: BMB 521      Credit Units: 01

Course Objective:
The aim of this course is to understand the diseases of blood and the problems of its replacement.

Course Contents:

Module I
To study the characteristic features of CO2 incubator
To study the principle and working of hemocytometer

Module II
To study the blood grouping
Isolation of peripheral blood mononuclear cells from whole blood using ficoll histopaque method of ultragradient centrifugation

Module III
Experimental counting of RBC and WBC under phase contrast inverted microscope using hemocytometer.

Examination Scheme:

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<th>IA (Practical Based)</th>
<th>Mid Term</th>
<th>Attendance</th>
<th>Major Experiment</th>
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10 10 10
BIOLOGY OF DISEASES LAB - I

Course Code: BMB 522      Credit Units: 01

Course Objective:
To develop an awareness of cellular and molecular pathogenesis of major diseases of selected organs and systems.

Course Contents:

Module I
Carcin to study the characteristic features of necrosis and apoptosis using suitable diagrams
To study the live cells using trypan blue exclusion method

Module II
Injury and to study the cancer slides and their morphological characteristics
Cytotoxicity assay using neutral red dye

Module III
Cellular Cell proliferation assay using MTT dye
To study the quantification of DNA and RNA using biochemical methods

Examination Scheme:

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MOLECULAR GENETICS LAB

Course Code: BMB 523 Credit Units: 02

Course Objective:
To provide a detailed understanding of molecular control of gene expression in prokaryotes and eukaryotes and also the molecular techniques employed in recombinant DNA technology.

Course Contents:

Module I
Advanced Molecular biology techniques-DNA sequencing, restriction mapping, PCR and cloning techniques in plants and animals.

Module II
Characteristics and uses of host vector systems-expression vectors and expression of cloned genes.

Examination Scheme:

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CLINICAL BIOCHEMISTRY LAB

Course Code: BMB 524      Credit Units: 02

Course Objective:
To develop an understanding of role of biochemistry and molecular biology in the diagnosis and clinical management of disease.

Course Contents:

Module I
Study of chromosome morphology of genetic disorder

Module II
Study of TS/LS cancer of different organ (permanent slides)

Module III
Estimation of blood urea

Module IV
Estimation of lipid profile

Module V
Blood group test/ Hematological test

Module VI
Estimation of antibodies by titration method

Examination Scheme:

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Note: Most of the practical of Clinical Biochemistry can be conducted in labs licensed to carry out medical procedures. Hence in our lab we can carry out a few selected practical mentioned above.
COMMUNICATION SKILLS - III

Course Code: BMB 541   Credit Units: 01

Course Objective:
To equip the participant with linguistic skills required in the field of science and technology while guiding them to excel in their academic field.

Course Contents:

Module I
Reading Comprehension
Summarising
Paraphrasing

Module II
Essay Writing
Dialogue Report

Module III
Writing Emails
Brochure
Leaflets

Module IV: Introduction to Phonetics
Vowels
Consonants
Accent and Rhythm
Accent Neutralization
Spoken English and Listening Practice

Examination Scheme:

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</table>

CAF – Communication Assessment File
GD – Group Discussion
GP – Group Presentation

Text & References:

- Effective English for Engineering Students, B Cauveri, Macmillan India
- Creative English for Communication, Krishnaswamy N, Macmillan
- A Textbook of English Phonetics, Balasubramanian T, Macmillan
BEHAVIOURAL SCIENCE - V
(GROUP DYNAMICS AND TEAM BUILDING)

Course Code: BMB 543 Credit Units: 01

Course Objective:
To inculcate in the students an elementary level of understanding of group/team functions
To develop team spirit and to know the importance of working in teams

Course Contents:

Module I: Group formation
Definition and Characteristics
Importance of groups
Classification of groups
Stages of group formation
Benefits of group formation

Module II: Group Functions
External Conditions affecting group functioning: Authority, Structure, Org. Resources, Organizational policies etc.
Internal conditions affecting group functioning: Roles, Norms, Conformity, Status, Cohesiveness, Size, Inter group conflict.
Group Cohesiveness and Group Conflict
Adjustment in Groups

Module III: Teams
Meaning and nature of teams
External and internal factors effecting team
Building Effective Teams
Consensus Building
Collaboration

Module IV: Leadership
Meaning, Nature and Functions
Self leadership
Leadership styles in organization
Leadership in Teams

Module V: Power to empower: Individual and Teams
Meaning and Nature
Types of power
Relevance in organization and Society

Module VI: End-of-Semester Appraisal
Viva based on personal journal
Assessment of Behavioural change as a result of training
Exit Level Rating by Self and Observer

Text & References:
- Organizational Behaviour, Davis, K.
- Bates, A. P. and Julian, J.: Sociology - Understanding Social Behaviour
- Dressers, David and Cans, Donald: The Study of Human Interaction
- LaFasto and Larson: When Teams Work Best, 2001, Response Books (Sage), New Delhi
Course Objective:
To furnish some basic knowledge of French culture and civilization for understanding an authentic document and information relating to political and administrative life

Course Contents:
Module D: pp. 131 – 156 Unités 10, 11

Contenu lexical:
Unité 10: Prendre des décisions
1. Faire des comparaisons
2. décrire un lieu, le temps, les gens, l'ambiance
3. rédiger une carte postale

Unité 11: faire face aux problèmes
1. Exposer un problème.
2. parler de la santé, de la maladie
3. interdire/demander/donner une autorisation
4. connaître la vie politique française

Contenu grammatical:
1. comparatif - comparer des qualités/quantités/actions
2. supposition : Si + présent, futur
3. adverbe - caractériser une action
4. pronom "Y"

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:
- le livre à suivre : Campus: Tome 1
GERMAN - V

Course Code: BMB 545      Credit Units: 02

Course Objective:
To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.
To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany
Introduction to Advanced Grammar and Business Language and Professional Jargon

Course Contents:

Module I: Genitive case
Genitive case – Explain the concept of possession in genitive
Mentioning the structure of weak nouns

Module II: Genitive prepositions
Discuss the genitive propositions and their usage: (während, wegen, statt, trotz)

Module III: Reflexive verbs
Verbs with accusative case
Verbs with dative case
Difference in usage in the two cases

Module IV: Verbs with fixed prepositions
Verbs with accusative case
Verbs with dative case
Difference in the usage of the two cases

Module V: Texts
A poem ‘Maxi’
A text Rocko

Module VI: Picture Description
Firstly recognize the persons or things in the picture and identify the situation depicted in the picture;
Secondly answer questions of general meaning in context to the picture and also talk about the personal experiences which come to your mind upon seeing the picture.

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Wolfgang Hieber, Lernziel Deutsch
- Hans-Heinrich Wangler, Sprachkurs Deutsch
- Schulz Griesbach, Deutsche Sprachlehre für Ausländer
- P.L. Aneja, Deutsch Interessant- 1, 2 & 3
- Rosa-Maria Dallapiazza et al, Tangram Aktuell A1/1,2
- Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs
Course Objective:
To enable students acquire working knowledge of the language; to give them vocabulary, grammar, voice modulations/intonations to handle everyday Spanish situations with ease.

Course Contents:

Module I
Revision of earlier semester modules

Module II
Future Tense

Module III
Presentations in English on
Spanish speaking countries’
Culture
Sports
Food
People
Politics
Society
Geography

Module IV
Situations:
En el hospital
En la comisaria
En la estacion de autobus/tren
En el banco/cambio

Module V
General revision of Spanish language learnt so far.

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Español Sin Fronteras, Greenfield
Course Objective:
To enable the students to converse, read and write language comfortably and be able to converse using different patterns and forms taught throughout. Students are taught and trained enough to get placed themselves in Japanese companies.

Note: Teaching is done in roman as well as Japanese script.

Course Contents:

Module I
Dictionary form of the verbs, Joining of verbs
Negative form of verbs
Potential form

Module II
Joining of many actions together
Usage of dictionary form of the verbs in sentences
Introducing colloquial language.

Module III
Direct form of the speech, quotations,
Expressing thoughts
Actions and reasoning

Module IV
Conclusion
Receiving and giving things, favour etc.
Different forms like ‘tara’ form.

Module V
Revision of the whole syllabus

Learning Outcome
➢ Students can speak and use different patterns, ways to describe a particular situation and can converse comfortably in mentioned situations throughout.
➢ Students can appear in the interviews for placements in Japanese companies.

Methods of Private study /Self help
➢ Teaching will be supported by handouts, audio-aids, and self-do assignments and role plays.
➢ Use of library, visiting and watching movies in Japan and culture center every Friday at 6pm.

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

Text:
- Teach yourself Japanese

References:
- Shin Nihongo no kiso 1
Course Code: BMB 548  
Credit Units: 02

Course Objective:
What English words come from Chinese? Some of the more common English words with Chinese roots are ginseng, silk, dim sum, fengshui, typhoon, yin and yang, T’ai chi, kung-fu. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

Course Contents:

Module I
Drills
Dialogue practice
Observe picture and answer the question.
Pronunciation and intonation.
Character writing and stroke order

Module II
Intonation
Chinese foods and tastes – tofu, chowmian, noodle, Beijing duck, rice, sweet, sour….etc. Learning to say phrases like – Chinese food, Western food, delicious, hot and spicy, sour, salty, tasteless, tender, nutritious, god for health, fish, shrimps, vegetables, cholesterol is not high, pizza, milk, vitamins, to be able to cook, to be used to, cook well, once a week, once a month, once a year, twice a week……
Repetition of the grammar and verbs taught in the previous module and making dialogues using it.
Compliment of degree “de”.

Module III
Grammar the complex sentence “suiran … danshi…..”
Comparison – It is colder today than it was yesterday…..etc.
The Expression “chule….yiwai”. (Besides)
Names of different animals.
Talking about Great Wall of China
Short stories

Module IV
Use of “huozhe” and “haishi”
Is he/she married?
Going for a film with a friend.
Having a meal at the restaurant and ordering a meal.

Module V
Shopping – Talking about a thing you have bought, how much money you spent on it? How many kinds were there? What did you think of others?
Talking about a day in your life using compliment of degree “de”. When you get up? When do you go for class?
Do you sleep early or late? How is Chinese? Do you enjoy your life in the hostel?
Making up a dialogue by asking question on the year, month, day and the days of the week and answer them.

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C – Project + Presentation  
I – Interaction/Conversation Practice

Text & References:

- “Elementary Chinese Reader ” Part-II Lesson 39-46
A term (or research) paper is primarily a record of intelligent reading in several sources on a particular subject. The students will choose the topic at the beginning of the session in consultation with the faculty assigned. The progress of the paper will be monitored regularly by the faculty. At the end of the semester the detailed paper on the topic will be submitted to the faculty assigned. The evaluation will be done by Board of examiners comprising of the faculties.

GUIDELINES FOR TERM PAPER
The procedure for writing a term paper may consist of the following steps:
1. Choosing a subject
2. Finding sources of materials
3. Collecting the notes
4. Outlining the paper
5. Writing the first draft
6. Editing & preparing the final paper

1. Choosing a Subject
The subject chosen should not be too general.

2. Finding Sources of materials
a) The material sources should be not more than 10 years old unless the nature of the paper is such that it involves examining older writings from a historical point of view.
b) Begin by making a list of subject-headings under which you might expect the subject to be listed.
c) The sources could be books and magazine articles, news stories, periodicals, scientific journals etc.

3. Collecting the notes
Skim through sources, locating the useful material, then make good notes of it, including quotes and information for footnotes.
a) Get facts, not just opinions. Compare the facts with author's conclusion.
b) In research studies, notice the methods and procedures, results & conclusions.
c) Check cross References.

4. Outlining the paper
a) Review notes to find main sub-divisions of the subject.
b) Sort the collected material again under each main division to find sub-sections for outline so that it begins to look more coherent and takes on a definite structure. If it does not, try going back and sorting again for main divisions, to see if another general pattern is possible.

5. Writing the first draft
Write the paper around the outline, being sure that you indicate in the first part of the paper what its purpose is. You may follow the following:
a) statement of purpose
b) main body of the paper
c) statement of summary and conclusion
Avoid short, bumpy sentences and long straggling sentences with more than one main idea.

6. Editing & Preparing the final Paper
a) Before writing a term paper, you should ensure you have a question which you attempt to answer in your paper. This question should be kept in mind throughout the paper. Include only information/ details/ analyses of relevance to the question at hand. Sometimes, the relevance of a particular section may be clear to you but not to your readers. To avoid this, ensure you briefly explain the relevance of every section.
b) Read the paper to ensure that the language is not awkward, and that it "flows" properly.
c) Check for proper spelling, phrasing and sentence construction.
d) Check for proper form on footnotes, quotes, and punctuation.
e) Check to see that quotations serve one of the following purposes:
(i) Show evidence of what an author has said.
(ii) Avoid misrepresentation through restatement.
(iii) Save unnecessary writing when ideas have been well expressed by the original author.
f) Check for proper form on tables and graphs. Be certain that any table or graph is self-explanatory.
Term papers should be composed of the following sections:
1. Title page
2. Table of contents
3. Introduction
4. Review
5. Discussion & Conclusion
6. References
7. Appendix

Generally, the introduction, discussion, conclusion and bibliography part should account for a third of the paper and the review part should be two thirds of the paper.

Discussion
The discussion section either follows the results or may alternatively be integrated in the results section. The section should consist of a discussion of the results of the study focusing on the question posed in the research paper.

Conclusion
The conclusion is often thought of as the easiest part of the paper but should by no means be disregarded. There are a number of key components which should not be omitted. These include:
1. summary of question posed
2. summary of findings
3. summary of main limitations of the study at hand
4. details of possibilities for related future research

Reference
From the very beginning of a research project, you should be careful to note all details of articles gathered. The bibliography should contain ALL References included in the paper. References not included in the text in any form should NOT be included in the bibliography. The key to a good bibliography is consistency. Choose a particular convention and stick to this.

Conventions
Monographs

Edited volumes
Gass, S./Neu, J. (eds.) (1996), Speech acts across cultures. Challenges to communication in a second language. Berlin/ NY: Mouton de Gruyter. [eds.] is used when there is more than one editor; and (ed.) where there is only one editor. In German the abbreviation used is (Hrsg.) for Herausgeber.

Edited articles

Journal articles

Electronic book

Electronic journal articles

Other websites

Unpublished papers
Unpublished theses/ dissertations

Appendix
The appendix should be used for data collected (e.g. questionnaires, transcripts, ...) and for tables and graphs not included in the main text due to their subsidiary nature or to space constraints in the main text.

Assessment Scheme:

Continuous Evaluation 40%
(Based on abstract writing, interim draft, general approach, research orientation, readings undertaken etc.)

Final Evaluation 60%
(Based on the organization of the paper, objectives/ problem profile/ issue outlining, comprehensiveness of the research, flow of the idea/ ideas, relevance of material used/ presented, outcomes vs. objectives, presentation/ viva etc.)
**Course Objective:**
The aim of this course is to provide a framework for understanding the mechanism of cell differentiation under normal and pathological state.

**Course Contents:**

**Module I**  
Normal mammalian fertilization and early embryonic development – cell potency, ES, EC and EG cells.

**Module II**  
Cellular and macular mechanism of differentiation and pattern formation, development processes in animal models.

**Module III**  
Manipulation of differentiation in vitro and in vivo in research and therapy design: Hematopoietic system as an example in normal & pathological state.

**Module IV**  
Embryonic development and cellular differentiation in pathological state.

**Module V**  
In vitro fertilization and embryo transfer, organ: culture, Agargel, Grid Method, Plasma Clot

**Examination Scheme:**

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**Text & References:**

- **Text:**  

- **References:**  
BIOLOGY OF DISEASE - II

Course Code: BMB 602  Credit Units: 03

Course Objective:
To promote a detail understanding of the mechanism by which selective physiological systems and the basic understanding of clinical biochemistry, clinical microbiology, human physiology and cellular pathology.

Course Contents:

Module I
Respiratory systems in health and disease- structure and function of lungs, air movement.

Module II
Chemical and neural control of breathing-respiratory function test.

Module III
Cardiovascular system in health and disease-structure, function and control of heart. Indicator of cardiac function. Cardiac catheters. Heart monitoring techniques.

Module IV
Cardiomyopathies and contractility failure. Circulatory and cellular shock.

Module V
Oxygen transport and delivery-alteration in oxygenation including blood, gas analysis technology.

Examination Scheme:

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Text & References:

Text:
- Bucher, L and Melender, S (19990, Critical care Nursing, W. B saunders.

References:
Course Objective:
To develop an understanding of epidemiology of infectious human disease, public health measures underpinning disease control.

Course Contents:

Module I
Clinically important taxonomic grouping of bacteris, Staphylococci, Streptococci etc. Isolation and identification strategies.

Module II
Clinical characteristic of disease.

Module III
Aetiology-identification of disease agents and their source, transmission, portals of entry, noscomial infections.

Module IV
Epidemiology-epidemics, pandemics and endemics disease. Control measure of microbial diseases-public health control methods. Hygiene regulations, population screening for disease.

Module V
Anti- microbial chemotherapy. Modes of action of major groups of antibiotics.

Examination Scheme:

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Text & References:

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References:
Course Objective:
To appreciate the effects and testing of drugs and other xenobiotics in mammalian, non-mammalian and other systems.

Course Contents:

Module I
Principle and concepts- history and scope, regulatory aspects, range of agents and effects, dose response relationships. Test systems-acute test, bio-assay, Outline of types of test. Clinical trials.

Module II

Module III

Module IV
Toxic injury, damage and cell death-cellular homeostasis, degeneration and cell death, necrosis and apoptosis.

Module V
Selected mechanisms of injury e.g., free radical injury.

Examination Scheme:

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</table>

Text & References:

Text:

References:
• Rubin, E, Faebler, J L (1990) Essential Pathology Lippincott.
IMMUNOLOGY - II

Course Code: BMB 605      Credit Units: 03

Course Objective:
To provide an understanding of the application of immunological methods in the prevention and treatment of disease.

Course Contents:

Module I
Cellular immunology, cell signaling and communication between cells and immune systems.

Module II
Antigen processing and presentation, effector cells and immune response.

Module III
Modulation of immune system/ vaccine development, lymphokine therapy, adoptive transfer and immuno therapy.

Module IV
Immuno deficiencies, allergies and autoimmunity. Tolerance and failure of immuno response.

Module V
Monoclonal antibodies in medicine- diagnostic and therapeutic agent, localization and bioimaging, immunotoxins.

Examination Scheme:

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Text & References:

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References:
Course Objective:
The aim of this course is to provide a frame work for understanding the mechanism of cell differentiation under normal and pathological state.

Course Contents:

Module I
It will be Diagrammatic illustration to show that Ontogeny repeats Phylogeny
To study the cell movement of the primitive streak of the chick embryo

Module II
To study the discoid cleavage in a chick egg, viewed from the animal pole
To detail the various stages of development in a chick embryo
To study the development of chick embryo in the egg, experimentally

Examination Scheme:

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Course Objectives:
To develop and understanding of epidemiology of infectious human disease, public health measures underpinning disease control.

Course Contents:

Module I
Preliminary identification of enteric pathogens using triple sugar iron agar.

Module II
The Kirby –Bauer Antibiotic Sensitivity test

Module III
IMViC test

Module IV
Various biochemical activities of microorganisms –Carbohydrate test, Catalase test, Urease test, Coagulase test etc.

Module V
Identification of an unknown bacterial culture till species level.

Examination Scheme:

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</table>
PHARMACOLOGY AND TOXICOLOGY LAB

Course Code: BMB 622 Credit Units: 02

Course Objective:
The lab techniques in the course aim at teaching students various methods and processes used during development of a bioactive compound or a drug. It deals with the very first step of identifying a source and leads in a sequential way into isolation, purification and activity testing of that compounds, all being a part of pharmacology.

Course Contents:

Module I
Isolation of compounds from different sources viz Plant, animal microbes. Different solvent systems can be used for extraction from plants. Extraction from microbes can be done by growing microbes like Penicillium spps. Under different conditions in large culture and product can be purified using various extraction procedures.

Module II
Phytochemical analysis of plant extracts like saponins, terpines, alkaloid, steroids and tannins for plants products. Protein estimation using Lowry’s test and SDS PAGE analysis for bacterial or fungal or recombinant proteins or enzymes.

Module III
Separation and extraction of the compound by techniques like TLC, column chromatography or salt ppt.

Module IV
Bioactivity testing of the purified compound by various techniques like agar diffusion, micro dilution any other relevant process.

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Course Objective:
To provide an understanding of the application of immunological methods in the prevention and treatment of disease.

Course Contents:

Module I
Visualization of human serum pattern by using page

Module II
IgG purification, Sandwich Elisa, Dot Elisa

Examination Scheme:

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COMMUNICATION SKILLS - IV

Course Code: BMB 641      Credit Units: 01

Course Objective:
To enhance the skills needed to work in an English-speaking global business environment.

Course Contents:

Module I: Business/Technical Language Development
Advanced Grammar: Syntax, Tenses, Voices
Advanced Vocabulary skills: Jargons, Terminology, Colloquialism
Individualised pronunciation practice

Module II: Social Communication
Building relationships through Communication
Communication, Culture and Context
Entertainment and Communication
Informal business/ Technical Communication

Module III: Business Communication
Reading Business/ Technical press
Listening to Business/ Technical reports (TV, radio)
Researching for Business /Technology

Module IV: Presentations
Planning and getting started
Design and layout of presentation
Information Packaging
Making the Presentation

Examination Scheme:

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CAF – Communication Assessment File
GD – Group Discussion
GP – Group Presentation

Text & References:

- Business Vocabulary in Use: Advanced Mascullo, Cambridge
- Business Communication, Raman –Prakash, Oxford
- Business Communications, Rodgers, Cambridge
- Working in English, Jones, Cambridge
- New International Business English, Jones/Alexander, Cambridge
Course Objective:
To develop an understanding the concept of stress its causes, symptoms and consequences.
To develop an understanding the consequences of the stress on one’s wellness, health, and work performance.

Course Contents:

Module I: Stress
Meaning & Nature
Characteristics
Types of stress

Module II: Stages and Models of Stress
Stages of stress
The physiology of stress
Stimulus-oriented approach.
Response-oriented approach.
The transactional and interactive model.
Pressure–environment fit model of stress.

Module III: Causes and symptoms of stress
Personal
Organizational
Environmental

Module IV: Consequences of stress
Effect on behaviour and personality
Effect of stress on performance
Individual and Organizational consequences with special focus on health

Module V: Strategies for stress management
Importance of stress management
Healthy and Unhealthy strategies
Peer group and social support
Happiness and well-being

Module VI: End-of-Semester Appraisal
Viva based on personal journal
Assessment of Behavioural change as a result of training
Exit Level Rating by Self and Observer

Text & References:

- Blonna, Richard; Coping with Stress in a Changing World: Second edition
- Pestonjee, D.M, Pareek, Udai, Agarwal Rita; Studies in Stress And its Management
- Pestonjee, D.M.; Stress and Coping: The Indian Experience
- Clegg, Brian; Instant Stress Management – Bring calm to your life now
Course Objective:
To strengthen the language of the students both in oral and written so that they can:
  i) express their sentiments, emotions and opinions, reacting to information, situations;
  ii) narrate incidents, events;
  iii) perform certain simple communicative tasks.

Course Contents:

Module D: pp. 157 – 168 – Unité 12

Unité 12: s’évader
  1. présenter, caractériser, définir
  2. parler de livres, de lectures
  3. préparer et organiser un voyage
  4. exprimer des sentiments et des opinions
  5. téléphoner
  6. faire une réservation

Contenu grammatical:
  1. proposition relative avec pronom relatif "qui", "que", "où" - pour caractériser
  2. faire + verbe

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- le livre à suivre : Campus: Tome 1
GERMAN - VI

Course Code:  BMB 645      Credit Units: 02

Course Objective:
To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.
To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany
Introduction to Advanced Grammar and Business Language and Professional Jargon

Course Contents:

Module I: Adjective endings
Adjective endings in all the four cases discussed so far
Definite and indefinite articles
Cases without article

Module II: Comparative adverbs
Comparative adverbs as and like

Module III: Compound words
To learn the structure of compound words and the correct article which they take
Exploring the possibility of compound words in German

Module IV: Infinitive sentence
Special usage of ‘to’ sentences called zu+ infinitive sentences

Module V: Texts
A Dialogue: ‘Ein schwieriger Gast’
A text: ‘Abgeschlossene Vergangenheit’

Module VI: Comprehension texts
Reading and comprehending various texts to consolidate the usage of the constructions learnt so far in this semester.

Module VII: Picture Description
Firstly recognize the persons or things in the picture and identify the situation depicted in the picture;
Secondly answer questions of general meaning in context to the picture and also talk about the personal experiences which come to your mind upon seeing the picture.

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Wolfgang Hieber, Lernziel Deutsch
- Hans-Heinrich Wangler, Sprachkurs Deutsch
- Schulz Griesbach, Deutsche Sprachlehre für Ausländer
- P.L Aneja, Deutsch Interessant- 1, 2 & 3
- Rosa-Maria Dallapiiazza et al, Tangram Aktuell A1/1,2
- Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs
SPANISH – VI

Course Code: BMB 646  Credit Units: 02

Course Objective:
To enable students acquire working knowledge of the language; to give them vocabulary, grammar, voice modulations/intonations to handle everyday Spanish situations in Present as well as in Present Perfect Tense with ease.

Course Contents:

Module I
Revision of the earlier modules

Module II
Present Perfect Tense

Module III
Commands of irregular verbs

Module IV
Expressions with Tener que and Hay que

Module V
En la embajada
Emergency situations like fire, illness, accident, theft

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Español, En Directo I A
- Español Sin Fronteras
Course Code: BMB 647 Credit Units: 02

Course Objective:
To enable the students to converse in the language with the help of verbs and the usage of different sentence patterns, which help them to strengthen the language.
Students are taught and trained enough to get placed in Japanese companies.
Note: The teaching is done in roman as well as Japanese script. 10 more kanjis are introduced in this semester.

Course Contents:

Module I: Polite form of verbs
Expressing feelings with the polite forms of verb.

Module II: Potential form
Ability of doing or not doing something

Module III: Conjunctions
Joining two sentences with the help of shi and mo

Module IV: Intransitive Verbs
Sentence patterns of indirect speech

Module V: Feelings and expressions
Regret, existence etc.

Learning Outcome
➢ Students can speak the language with the use of different forms of verb.

Methods of Private study/ Self help
➢ Hand-outs, audio -aids, assignments and role-plays will support classroom teaching.
➢ Students are encouraged to watch Japanese movies at Japan Cultural and information center.

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Shin Nihon-go no Kiso Lesson No. 26 to 30.
- All vocabulary and topics taught are from the above-mentioned book.
Course Code: BMB 648  Credit Units: 02

Course Objective:
Chinese emperor Qin Shi Huang – Ti who built the great wall of China also built a network of 270 palaces, linked by tunnels, and was so afraid of assassination that he slept in a different palace each night. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

Course Contents:

Module I
Drills
Dialogue practice
Observe picture and answer the question.
Pronunciation and intonation.
Character writing and stroke order.

Module II
Going out to see a science exhibition
Going to the theatre.
Train or Plane is behind schedule.
Indian Economy-Chinese Economy
Talking about different Seasons of the Year and Weather conditions. Learning to say phrases like-spring, summer, fall, winter, fairly hot, very cold, very humid, very stuffy, neither hot nor cold, most comfortable, pleasant … etc.

Module III
Temperature – how to say – What is the temperature in May here?
How is the weather in summer in your area?
Around 30 degrees
Heating, air-conditioning
Is winter is Shanghai very cold?
Talking about birthdays and where you were born?
The verb “shuo” (speak) saying useful phrases like speak very well, do not speak very well, if speak slowly then understand if speak fast then don’t understand, difficult to speak, difficult to write, speak too fast, speak too slow, listen and can understand, listen and cannot understand … etc.
Tell the following in Chinese – My name is …. I was born in … (year). My birthday is …… Today is … (date and day of the week). I go to work (school) everyday. I usually leave home at . (O’clock). In the evening, I usually …….. (do what)? At week end, I ………. On Sundays I usually …………… It is today….. It will soon be my younger sisters birthday. She was born in …. (year). She lives in ………. (where). She is working (or studying)…… where… She lives in …… (where.)

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:
• Elementary Chinese Reader Part-2 ,3 ; Lesson 47-54
BIOLOGY OF DISEASE - III
(MOLECULAR AND CELLULAR ASPECTS OF DISEASE)

Course Code: BMB 701      Credit Units: 03

Course Objective:
To critically appraise the current understanding of a range of human disease and dysfunction at the molecular and cellular levels. Also to understand the basis of diagnostic and monitoring techniques.

Course Contents:

Module I
Cell and molecular biology of metastasis. Clinical of neoplasia.

Module II
Molecular and systemic basis of aging. Physiology at the extremes of age.

Module III

Module IV
Molecular genetics of disease- basic pathogenesis of selected diseases, molecular insights, clinical aspects and therapies. Illustrative examples-diabetes, cystic fibrosis, retinis pigmentosa, Duchenne muscular dystrophy, Huntington’s chorea.

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References:
GENOME STRUCTURE AND FUNCTION

Course Code: BMB 702 Credit Units: 03

Course Objective:
To develop and understanding of complexity and organisation of eukaryotic genome. To evaluate current research on the molecular basis of the control of eukaryotic gene expression development in genomics and bioinformatics.

Course Contents:

Module I: Genome Evolution
Origin of genomes, Acquisition of new genes, DNA sequencing – chemical and enzymatic methods, The origins of introns, Genetics to genomics to functional genomics. Forward genetics (Phenotype to gene structure) and Reverse genetics (Gene structure to phenotype).

Module II: Structural Genomics
Chromosome structure and Genome organization, Genome sequencing methods, Genome assembly, Gene identification methods, Sequences Comparison Techniques, Genome annotation techniques.

Module III: Comparative Genomics
Phylogeny, COGS [Cluster of orthologues genes], paralogues and gene displacement, Metabolic Reconstruction, The Basic Principles and Methodology.

Module IV: Functional Genomics
ESTs, SAGE, cDNA Microarrays, Oligonucleotide Microarray Chips, Cancer and genomic microarrays, Application of Microarrays with examples, Microarray Data Analysis; Real Time PCR; Gene finding tools

Module V: Genotyping Background and Applications.
Genetic and physical mapping: Introduction to molecular markers-RFLP, RAPD, AFLP, SSRs and others. Genetic and physical maps, map based cloning, mapping population, southern and in situ hybridization for genome analysis, DNA fingerprinting; Single nucleotide polymorphisms, RNA interference, antisense RNA, siRNA, MiRNA; Human Genome Project; Pharmacogenomics: Ethical considerations of genetic testing; Genomics in drug discovery.

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Text & References:

Text:
- Bioinformatics: From Genomes to Drugs, T. Lengauer, John Wiley and Sons Inc.
- Bioinformatics: Sequence and Genome Analysis, D.W. Mount, Cold Spring Harbor Laboratory Press
- Genomes II, T.A. Brown
- Biotechnology and Genomics by P.K. Gupta

References:
- A Primer of Genome Science, Greg Gibson and Spencer V. Muse
- Database Annotation in Molecular Biology : Principles and Practice, Arthur M. Lesk
- DNA : Structure and Function, Richard R. Sinden
- Recombinant DNA (Second Edition), James D. Watson and Mark Zoller
- Gene Cloning and DNA Analysis – An introduction (Fourth Edition), T.A. Brown
- Genes & Genomes, Maxine Singer and Paul Berg
- Essential of Genomics and Bioinformatics, C.W. Sensen, John Wiley and Sons Inc.
- Functional Genomics – A Practical Approach, S.P. Hunt and R. Livesey, Oxford University Press
- Proteomics, T. Palzkill, Kluwer Academic Publishers
- Statistical Genomics: Linkage, Mapping and QTL Analysis, B. Liu, CRC Press.
- Genome II by T.A. Brown
Course Objective:
To conduct an integrated study of the current status of aspects of clinically related biotechnology at the organismic, cellular and molecular level.

Course Contents:

Module I
Current topics in animal and cellular and molecular biology - cellular and molecular mechanism of human diseases.

Module II
Transgenesis - animal models of human diseases, animals for pharmaceutical protein production.

Module III
Tissue Engineering

Module IV
Manipulation of reproduction and development for application in medicine

Examination Scheme:

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Text & References:

Text:
- Molecular Biotechnology by S.B. Primrose

References:
- Biotechnology and Biopharmaceuticals: Transforming Proteins and Genes Into Drugs by Rodney J.Y. Ho, Milo Gibaldi
Course Objective:
To evaluate the role of antibody engineering in the biomedical exploitation of antibodies and new methodologies for manufactures of antibodies, tissue transplantation and immune regulation.

Course Contents:

Module I
Detail structure, function and molecular genetics of the antibody molecule; Antibody engineering, humanized and chimeric antibodies, methods of production, potential role in therapy and biotechnology.

Module II
The phage display system, the development of in vitro selection procedures.

Module III
The long term future for antibodies in diagnosis/ therapy, competition and co-operation with nucleic acid based technologies.

Module IV
Human immuno genetics- basic principles and clinical relevance. The major histo compatibility complexes, relationship to various disease states and role in tissue transplantation.

Module V
Immuno regulation, tolerance and auto-immunity

Examination Scheme:

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</table>

Text & References:

Text:
- Advanced Immunology, Male, D., Champion, b., Corte, A Gower (current edition).

References:
- Advances in Immunology (Journal).
- Immunology today( Journal )
BIOLOGY OF DISEASE LAB - III

Course Code: BMB 720      Credit Units: 01

Course Objective:
To critically appraise the current understanding of a range of human diseases and dysfunction at the molecular and cellular levels. Also to understand the basis of diagnostic and monitoring techniques.

Course Contents:

Module I
Proposal of an innovative project on gene therapy/current biomedical advances by the students and presentation of the same.

Module II: Understanding by metaplasia by histopathological slides
- Squamous cell carcinoma lung
- Adenocarcinoma colon
- Carcinoma breast
- Carcinoma thyroid
- Endometrial carcinoma
- Carcinoma ovary
- Hodgkin Lymphoma

Module III: Understanding of human disease pathology by representative slides
- Cystic Fibrosis-Lung
- Cystic Fibrosis-Pancreas
- Retinitis Pigmentosa
- Duchenne’s muscular dystrophy
- Huntingtin’s brain tissue section

Examination Scheme:

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GENOME STRUCTURE AND FUNCTION LAB

Course Code: BMB 721  Credit Units: 01

Course Objective:
To develop and understanding of complexity and organisation of eukaryotic genome. To evaluate current research on the molecular basis of the control of eukaryotic gene expression development in genomics and bioinformatics.

Course Contents:

Module I
Genome databases at various biological web resources

Module II
DNA sequencing methods

Module III
Gene finding tools and Genome annotation

Module IV
Comparison of two given genomes

Module VI
Microarray and Microarray data analysis

Examination Scheme:

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Course Objective:
To conduct an integrated study of the current status of aspects of clinically related biotechnology at the organismic, cellular and molecular level.

Course Contents:

Module I
To characterize the protein sample given on a polyacrylamide gel
To quantify and characterize proteins extracted from cell lysate

Module II
To calibrate the spectrophotometer using varying concentration of BSA and by using biuret agent
To perform the enzymatic digestion of the given protein to generate peptides and separate them by gel electrophoresis

Module III
To study the preparation of different nutrient media and filter through filter assembly
Maintenance of given cell line and study the viability using trypan blue dye

Examination Scheme:

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Course Code: BMB 723      Credit Units: 02

Course Objective:
To evaluate the role of antibody engineering in the biomedical exploitation of antibodies and new methodologies for manufactures of antibodies, tissue transplantation and immune regulation.

Course Contents:

Module I
To perform Immunochemistry, Haemoglutination, HLA titration

Module II
Production of Monoclonal antibody ( If not possible visit to any Institute )

Examination Scheme:

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COMMUNICATION SKILLS - V

Course Code: BMB 741      Credit Units: 01

Course Objective:
To facilitate the learner with Academic Language Proficiency and make them effective users of functional language to excel in their profession.

Course Contents:

Module I
Introduction to Public Speaking
Business Conversation
Effective Public Speaking
Art of Persuasion

Module II: Speaking for Employment
Types of Interview
Styles of Interview
Facing Interviews-Fundamentals and Practice Session
Conducting Interviews- Fundamentals and Practice Session
Question Answer on Various Dimensions

Module III
Resume Writing
Covering Letters
Interview Follow Up Letters

Module IV: Basic Telephony Skills
Guidelines for Making a Call
Guidelines for Answering a Call

Module V: Work Place Speaking
Negotiations
Participation in Meetings
Keynote Speeches

Examination Scheme:

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</table>

CAF – Communication Assessment File
GD – Group Discussion
GP – Group Presentation

Text & References:
- Jermy Comfort, Speaking Effectively, et.al, Cambridge
- Krishnaswamy, N, Creative English for Communication, Macmillan
- Taylor, Conversation in Practice,
Course Objective:
This course aims at enabling students towards:
Understand the importance of individual differences
Better understanding of self in relation to society and nation
Facilitation for a meaningful existence and adjustment in society
Inculcating patriotism and national pride

Course Contents:

Module I: Individual differences & Personality
Personality: Definition & Relevance
Importance of nature & nurture in Personality Development
Importance and Recognition of Individual differences in Personality
Accepting and Managing Individual differences (adjustment mechanisms)
Intuition, Judgment, Perception & Sensation (MBTI)
BIG5 Factors

Module II: Managing Diversity
Defining Diversity
Affirmation Action and Managing Diversity
Increasing Diversity in Work Force
Barriers and Challenges in Managing Diversity

Module III: Socialization
Nature of Socialization
Social Interaction
Interaction of Socialization Process
Contributions to Society and Nation

Module IV: Patriotism and National Pride
Sense of pride and patriotism
Importance of discipline and hard work
Integrity and accountability

Module V: Human Rights, Values and Ethics
Meaning and Importance of human rights
Human rights awareness
Values and Ethics - Learning based on project work on Scriptures like- Ramayana, Mahabharata, Gita etc.

Module VI: End-of-Semester Appraisal
Viva based on personal journal
Assessment of Behavioural change as a result of training
Exit Level Rating by Self and Observer

Text & References:

- Davis, K. Organizational Behaviour,
- Bates, A. P. and Julian, J.: Sociology - Understanding Social Behaviour
- Dressler, David and Cans, Donald: The Study of Human Interaction
- Robbins O.B. Stephen; Organizational Behaviour
Course Objective:
Revise the portion covered in the first volume, give proper orientation in communication and culture.

Course Contents:

Module A: Unités 1 – 3: pp. 06 - 46

Contenu lexical:

Unité 1: Rédiger et présenter son curriculum vitae
   Exprimer une opinion
   Caractériser, mettre en valeur
   Parler des rencontres, des lieux, des gens

Unité 2: Imaginer - Faire des projets
   Proposer - conseiller
   Parler des qualités et des défauts
   Faire une demande écrite
   Raconter une anecdote
   Améliorer son image

Unité 3: Exprimer la volonté et l’obligation
   Formuler des souhaits
   Exprimer un manque/un besoin
   Parler de l’environnement, des animaux, des catastrophes naturelles

Contenu grammatical:

1. Le passé : passé composé/imparfait
2. Pronoms compléments directs/indirects, y/en (idées/chooses)
3. Propositions relatives introduites par qui, que, où
4. Comparatif et superlatif
5. Le conditionnel présent
6. Situer dans le temps
7. Féminin des adjectifs
8. La prise de paroles : expressions
9. Le subjonctif : volonté, obligation

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- le livre à suivre : Campus: Tome 2
Course Objective:
To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.
To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany
Introduction to Advanced Grammar and Business Language and Professional Jargon

Course Contents:

Module I: Dass- Sätze
Explain the use of the conjunction “-that”, where verb comes at the end of the sentence

Module II: Indirekte Fragésätze
To explain the usage of the “Question Pronoun” as the Relative Pronoun in a Relative Sentence, where again the verb falls in the last place in that sentence.

Module III: Wenn- Sätze
Equivalent to the conditional “If-” sentence in English. Explain that the verb comes at the end of the sentence.

Module IV: Weil- Sätze
Explain the use of the conjunction “because-” and also tell that the verb falls in the last place in the sentence.

Module V: Comprehension texts
Reading and comprehending various texts to consolidate the usage of the constructions learnt so far in this semester.

Module VI: Picture Description
Firstly recognize the persons or things in the picture and identify the situation depicted in the picture;
Secondly answer questions of general meaning in context to the picture and also talk about the personal experiences which come to your mind upon seeing the picture.

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Wolfgang Hieber, Lernziel Deutsch
- Hans-Heinrich Wangler, Sprachkurs Deutsch
- Schulz Griesbach, Deutsche Sprachlehre für Ausländer
- P.L Aneja, Deutsch Interessant- 1, 2 & 3
- Rosa-Maria Dallapienza et al, Tangram Aktuell A1/1,2
- Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs
Course Objective:
To enable students acquire working knowledge of the language; to give them vocabulary, grammar, expressions used on telephonic conversation and other situations to handle everyday Spanish situations with ease.

Course Contents:

Module I
Revision of earlier semester modules

Module II
Zodiac signs. More adjectives…to describe situations, state of minds, surroundings, people and places.

Module III
Various expressions used on telephonic conversation (formal and informal)

Module IV
Being able to read newspaper headlines and extracts (Material to be provided by teacher)

Module V
Negative commands (AR ending verbs)

Module VI
Revision of earlier sessions and introduction to negative ER ending commands, introduction to negative IR ending verbs

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Español En Directo I A, 1B
- Español Sin Fronteras
- Material provided by the teacher from various sources
Course Objective:
To enable the students to converse in the language with the help of different speech, possibilities, probabilities etc.
Note: The teaching is done in roman as well as Japanese script. 10 more kanjis (Japanese characters) are taught in this semester.

Course Contents:

Module I: Thought
Expressing one’s thought and intentions on different situations.

Module II: Advice
Giving advice, probability, possibility and suggestions.

Module III: Informal Speech
Addressing friends and close people using informal ways.

Module IV: Simultaneous Verbs
Describing two situations simultaneously.

Module V: Possibility
Explaining the probability and possibility of any situation.

Learning Outcome
➢ Students can interact in a formal as well as informal way on above-mentioned topics.

Methods of Private study/ Self help
➢ Hand-outs, audio-aids, assignments and role-plays will support classroom teaching.

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Shin Nihon-go no Kiso Lesson No.-31 to 35.
- All vocabulary and topics taught to the students are from the above mentioned book.
The story of Cinderella first appears in a Chinese book written between 850 and 860 A.D. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

**Course Contents:**

**Module I**
Drills  
Dialogue practice  
Observe picture and answer the question.  
About china part – I Lesson 1,2.

**Module II**
Pronunciation and intonation  
Character Writing and stroke order.

**Module III**
Ask someone what he/she usually does on weekends?  
Visiting people, Party, Meeting, After work….etc.

**Module IV**
Conversation practice  
Translation from English to Chinese and vise-versa.  
Short fables.

**Module V**
A brief summary of grammar.  
The optative verb “yuanyi”.  
The pronoun “ziji”.

**Examination Scheme:**

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C – Project + Presentation  
I – Interaction/Conversation Practice

**Text & References:**

- “Kan tu shuo hua” Part-I Lesson 1-7
SUMMER INTERNSHIP

Course Code: BMB 750 Credit Units: 09

GUIDELINES FOR SUMMER TRAINING
The main objective of summer training is to familiarize students to laboratory environment and make them learn to handle equipments and softwares, design experiments and analyze the results. The student will be supervised by one or more faculty members and he or she will be required to submit a synopsis. While writing a synopsis emphasis should be given to make it publishable. But whether or not the results of a research project are publishable, the project should be communicated in the form of a research report written by the student. Initial drafts should be critiqued by the faculty guide and corrected by the student at each stage. The File is the principal means by which the work carried out will be assessed and therefore great care should be taken in its preparation.

In general, the File should be comprehensive and include
- A short account of the activities that were undertaken as part of the project;
- A statement about the extent to which the project has achieved its stated goals.
- A statement about the outcomes of the evaluation and dissemination processes engaged in as part of the project;
- Any activities planned but not yet completed as part of the project, or as a future initiative directly resulting from the project;
- Any problems that have arisen that may be useful to document for future reference.

Report Layout
The report should contain the following components:
- TITLE PAGE
- CERTIFICATE
- ACKNOWLEDGEMENT
- ABBREVIATIONS
- CONTENTS WITH PAGE NUMBERS
- CHAPTER –
  a. INTRODUCTION
  b. REVIEW OF LITERATURE
  c. MATERIALS & METHODS
  d. RESULTS & DISCUSSION
  e. SUMMARY AND CONCLUSION
  f. REFERENCES
  g. APPENDIX (OPTIONAL)

- 1 inch Margin on left side & 1”each on other sides.
- Single side of the paper to be used.
- Times New Roman.

Font Size
- 12 (Bold for headings)
- 12 (Normal for Matter)
- 14 (for Chapter Names)
- 1.5 line spacing
- Numbering on the right hand Top of the page
- Numbers on pages before chapters to be done in Roman at the bottom of the page

References
This should include papers and books referred to in the body of the report. These should be ordered alphabetically on the author's surname. The titles of journals preferably should not be abbreviated; if they are, abbreviations must comply with an internationally recognised system.

Examples
For Research Article
For Book

Scientific names in Italics

Cover Page containing - Title, Students Name, Supervisors Name, University, Name (along with logo), Course name & year of Submission in the prescribed format copies to be submitted

ASSESSMENT OF THE PROJECT FILE

Essentially, marking will be based on the following criteria: the quality of the report, the technical merit of the project and the project execution. Evaluation will compose of two components - Project report assessment and Viva - voce. Project report assessment will be done by the two internal faculty members in respective fields. A committee of three faculty members will conduct Viva-voce.

Technical merit attempts to assess the quality and depth of the intellectual efforts put into the project will be assessed as per evaluation format.

Examination Scheme:

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ADVANCED MEDICAL MICROBIOLOGY

Course Code: BMB 801      Credit Units: 03

Course Objective:
To assess the value of modern biotechnological developments for disease diagnosis and importance of developments of multiple drug resistance in microbes.

Course Contents:

Module I
Mechanisms of multiple drug resistance in microorganisms.

Module II
Limitation of current drug treatment and new drug development strategies.

Module III
Biotechnological approaches to antiviral, antibacterial and antifungal therapy.

Module IV
Medicines from plants, Ethnobotany.

Examination Scheme:

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Text & References:

Text:

References:
- Current research literature
Course Objective:
To demonstrate and appreciation of the business perspectives of medical biotechnology, understanding of scientific, technological and commercial activity of selective biomedical industries and research institutions.

Course Contents:

Module I
Biobusiness perspective- general business strategies and marketing concepts relation to the health care market.

Module II
Operation management. New bioproduct development.

Module III
Biotechnology and legal issues pertinent to the biomedical sector-regulatory/safety issues, intellectual property rights, biopatenting.

Module IV
Selected biomedical activities-industrial case studies based on visits and seminars covering a range of biomedical commercial organization and research institutions- for example: biomedical research centre, Dundee (cancer research)

Examination Scheme:

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Text & References:

Text:

References:
CONTEMPORARY BIOMEDICAL SCIENCE

Course Code: BMB 803 Credit Units: 03

Course Objective:
To develop an awareness of current medical technology, research, commerce, funding, regulation social and ethical aspects and also to develop the ability to give a critical evaluation of these developments.

Course Contents:

Module I
Seminars/ Discussions groups to appraise students of recent developments in medical biotechnology and their impact upon society Guidance on relevant, original literature published during the previous 12 months.

Module II

Module III
Type of Articles (review, letters etc). Scientific paper format (Abstract, Introduction, Materials and Methods, Results, Discussion). Writing, evaluating, presenting and publishing the results of scientific research in the academic press (journals, conferences etc). Choosing the appropriate journal (Sources, Information, Instructions to authors, peer review system, journal evaluation)

Examination Scheme:

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Text & References:

- Research Methodology Methods and Techniques By C.R. Kothari
Course Code: BMB 820      Credit Units: 02

Course Objective:
To assess the value of modern biotechnological developments for disease diagnosis and importance of developments of multiple drug resistance in microbes

Course Contents:

Module I
Antibiotic drug sensitivity by Kirby-Bauer method and Broth-Dilution method.

Module II
Preparation of crude and purified extract of ethanobotanical drugs,
Application of this crude and purified extract on various strains of bacteria,
Collection of various ethanobotanical drugs and its uses.

Examination Scheme:

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Course Code: BMB 821  Credit Units: 01

Course Objective:
To develop an awareness of current medical technology, research, commerce, funding, regulation social and ethical aspects and also to develop the ability to give a critical evaluation of these developments.

Course Contents:

Module I
Formulating a research plan

Examination Scheme:

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<td>Class Test (Practical Based)</td>
<td>Mid Term Viva</td>
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Course Objective:
To demonstrate and appreciation of the business perspectives of medical biotechnology, understanding of scientific, technological and commercial activity of selective biomedical industries and research institutions.

Course Contents:

Module I
Case studies based on Industry Visit and make a small project related to that.

Module II
Case Studies related to marketing concepts (health care market or any new product related to Biotechnology)

Examination Scheme:

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**Course Objective:**
The modules are designed to enhance the communicative competence of the learners to equip them with efficient interpersonal communication.

**Course Contents:**

**Module I: Dynamics of Group Discussion**
- Introduction,
- Methodology
- Role Functions
- Mannerism
- Guidelines

**Module II: Communication through Electronic Channels**
- Introduction
- Technology based Communication Tools
- Video Conferencing
- Web Conferencing
- Selection of the Effective Tool
- E-mails, Fax etc.

**Module III: Effective Public Speaking**
- Types
- Essentials
- Success in Public Speaking
- Dos and Don’ts

**Examination Scheme:**

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<tr>
<th>Components</th>
<th>CT1</th>
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</tbody>
</table>

CAF – Communication Assessment File
GD – Group Discussion
GP – Group Presentation

**Text & References:**

- Jermy Comfort, Speaking Effectively, et.al, Cambridge
- Krishnaswamy, N, Creative English for Communication, Macmillan
- Taylor, Conversation in Practice,
Course Objective:
Importance of Personal and Professional excellence
Inculcating the components of excellence

Course Contents:

Module I: Components of Excellence
Personal Excellence:
Identifying long-term choices and goals
Uncovering the talent, strength & style
Analyzing choke points in your personal processes by analysis in area of placements, events, seminars, conference, extracurricular activities, projects etc.

Module II: Managing Personal Effectiveness
Setting goals to maintain focus
Dimensions of personal effectiveness (self disclosure, openness to feedback and perceptiveness)
Integration of personal and organizational vision for effectiveness
A healthy balance of work and play
Managing Stress creatively and productively

Module III: Personal Success Strategy
Time management
Handling criticism and interruptions
Dealing with difficult people
Mapping and evaluating the situations
Identifying long-term goals

Module IV: Positive Personal Growth
Understanding & Developing positive emotions
Positive approach towards future
Resilience during loss and challenge

Module V: Professional Success
Building independence & interdependence
Reducing resistance to change
Continued reflection (Placements, events, seminars, conferences, projects extracurricular Activities etc.)

Module VI: End-of-Semester Appraisal
Viva based on personal journal
Assessment of Behavioural change as a result of training
Exit Level Rating by Self and Observer
FRENCH - VIII

Course Code: BMB 844      Credit Units: 02

Course Objective:
Provide students with the necessary linguistic tools
- to face up to different situations of communication
- to enhance their capacity in oral/written comprehension/expression

Course Contents:

Module B: Unités 4, 5, 6: PP. 48 - 86

Contenu lexical:

Unité 4:
1. Présenter une information/les circonstances d’un événement
2. Exprimer la possibilité/la probabilité
3. Exprimer une quantité indéfinie
4. Comprendre et raconter un fait div

Unité 5:
1. Parler d’une passion, d’une aventure
2. Choisir/créer
3. Exprimer la surpise/des sentiments

Unité 6:
1. Exprimer la cause et la conséquence
2. Exprimer la crainte et rassurer
3. Faire une démonstration

Contenu grammatical:

1. la construction passive
2. la forme impersonnelle
3. l’interrogation
4. les adjectifs et les pronoms indéfinis
5. les pronoms interrogatifs et démonstratifs
6. la construction avec deux pronoms
7. le subjonctif dans l’expression des sentiments, de la crainte, du but
8. constructions permettant l’expression de la cause et de la conséquence
9. l’enchaînement des idées : succession et opposition

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:
- le livre à suivre : Campus: Tome 2
Course Objective:
To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.
To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany
Introduction to Advanced Grammar and Business Language and Professional Jargon

Course Contents:

Module I: Reading and comprehension
Reading texts and comprehending them

Module II: Information about German History
Acquiring information about German History through appropriate texts and stories

Module III: Bio data/Curriculam vitae
Writing a bio-data in the proper format with all essential components

Module IV: Informal letters
Reading and writing informal letters

Module V: Business etiquette
Business etiquette in Germany and types of companies

Module VI: Interview skills
To learn to face interviews
Read a text ‘Interviewspiel’

Module VII: Picture Description
Firstly recognize the persons or things in the picture and identify the situation depicted in the picture;
Secondly answer questions of general meaning in context to the picture and also talk about the personal experiences which come to your mind upon seeing the picture.

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Wolfgang Hieber, Lernziel Deutsch
- Hans-Heinrich Wangler, Sprachkurs Deutsch
- Schulz Griesbach, Deutsche Sprachlehre für Ausländer
- P.L Aneja, Deutsch Interessant- 1, 2 & 3
- Rosa-Maria Dallapiazza et al, Tangram Aktuell A1/1,2
- Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs
Course Objective:
To enable students to deal with Spanish situations putting things in perspective, using Past Tense. Enabling them to comprehend and form slightly complex sentences. Give students vocabulary of various situations.

Course Contents:

Module I
Situational exercises/Picture Description:
At the cine
At the Chemist’s/Hospital

Module II
At a corporate client’s informal/formal meeting/gathering
Looking for accommodation

Module III
Past Tense (Indefinido) of regular verbs
Past Tense (Indefinido) of irregular verbs
Exercises related to the above

Module IV
Past Tense (Imperfecto)

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Español En Directo I A, 1B
- Español Sin Fronteras
- Material provided by the teacher from various sources
Course Objective:
To enable the students to converse in the language with the help of different forms as volitional forms, active and passive voice and decision making etc.

Note: The course and teaching in Roman as well as Japanese script. Also introducing next 10 to 20 kanjis.

Course Contents:

Module I: Volitional forms
Explaining the situation when one is thinking of doing something.

Module II: Active and Passive voice
Direct and indirect ways of speech.

Module III: Plain Forms
Sentence patterns using plain forms of verb.

Module IV: Causes and effects
Explaining causes and effects with different forms of verb.

Module V: Decision making
Expressing different occupations and how to make decision.

Learning Outcome
➢ Students can speak the language and will be able to express their views and opinions comfortably.

Methods of Private study/ Self help
➢ Hand-outs, audio-aids, assignments and role-plays will support classroom teaching.

Examination Scheme:

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Text & References:
- Shin Nihon-go no Kiso Lesson No.-36 to 40.
- All vocabulary and topics taught to the students are from the above mentioned book.
Course Objective:
Paper was first invented in China in 105 AD. It was a closely guarded secret and didn’t reach Europe until the 8th Century. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

Course Contents:

Module I
Drills
Dialogue practice
Observe picture and answer the question.
The aspect particle “le” and the modal particle “le”.

Module II
Optative verbs
Texts based on different topics
Enriching vocabulary by dealing with various daily scenarios and situations.

Module III
Sentences with subject predicate construction as its predicate
Pronunciation and intonation
Character writing and stroke order

Module IV
About China Part I Lesson 2,3
Chinese to English and English to Chinese translations from the news paper.

Module V
Questions with an interrogative pronoun
Essays, writing formal letters.
Conversation practice.

Examination Scheme:

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:
- “Kan tu shuo hua” Part-I Lesson 8-13
RESEARCH PROJECT

Course Code: BMB 860                  Credit Units: 14

Course Objective:
To apply intellectual, organizational and technical skills to a specific aspects of biological sciences or biotechnology with the objective to produce a project report.

Course Contents:

Module I
To produce a written report from a research based project on a specific of biological sciences or biotechnology under the supervision named academic, and/ or supervisory team.

RESEARCH REPORT

Research projects are encouraged in the following fields:
Biotechnology includes areas such as drug design, protein engineering, diagnostics, transfection, fermentation technology, plant genetic engineering, environmental remediation and biocontrol.

- In vitro storage of plant tissues, with particular emphasis on cryopreservation
- Nocardioform bacteria and mycobacteria - cloning genes of medical and environmental importance
- Plant and insect virology and plant breeding
- Detection, molecular characterisation, phylogeny and evolution of new plant viruses
- Viral disease resistance
- Protein biotechnology
- Industrial biotechnology
- Cancer cell adhesion, invasion and metastasis
- Food microbiology and bacteriocins
- Molecular developmental biology

Examination Scheme:
The viva voce examination of summer project will be held out of 100 marks during end term examination. The Examination Scheme: would be decided by both external and internal examiners.

Text & References:

Text:

References:
- Parker, R.E (1979) introductory statistics for Biology (Arnold).
- Temple, m (1978) A pocket guide to written English (Murray).