Master of Science (Biotechnology)

Programme Code: MSB

Duration – 2 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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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
PROGRAM OBJECTIVE

The objective of Masters Programme in Biotechnology of Amity University is to develop multifaceted academically excellent students in various areas of Biotechnology. The course also aims to enhance the knowledge gained by them in the undergraduate curriculum so as to make them competent for future, academic or industrial pursuits.

The subjects included in the course curriculum suffice for both fundamental and applied aspects of biotechnology. Each subject is adequately supported by applied practicals conducted in well-equipped laboratories. Subjects like Cell Biology, Genetics, Enzymology, Microbiology, Plant Biotechnology, Animal Biotechnology, and Immunology have contents with molecular approach so as to fulfill the requirements of current research and developmental needs. Industry oriented subjects like bioprocess engineering, downstream processing is taught for imparting knowledge of biotechnological application in industry. In addition, molecular biology and recombinant DNA Technology is taught at advanced levels as they form the core foundation of biotechnology and biotechnological processes. Therefore the present postgraduate curriculum in Biotechnology is aimed to produce highly motivated challenging young biotechnologist to take our country on the path of Biotechnology revolution.
**PROGRAMME STRUCTURE**

**FIRST SEMESTER**

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<th>Course Code</th>
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**SECOND SEMESTER**

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**SUMMER INTERNSHIP OF 09 -12 WEEKS**

**THIRD SEMESTER**

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**FOURTH SEMESTER**

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**NOTE:** Students of batch 2009-11 shall study the course Environmental Biotechnology in Semester IV as they have already studied the course Advance Biostatistics for Biologists in Semester I.
Curriculum & Scheme of Examination

ADVANCED BIOCHEMISTRY

Course Code: MSB 101          Credit Units: 04

Course Objective:
Objective of this course is to help students navigate the discipline of biochemistry that explains how the collection of inanimate molecules that constitute the living systems interact, to maintain and perpetuate life. This knowledge has its roots in medicine, nutrition, agriculture, fermentation and natural products chemistry. It also aims to provide an understanding of the principles and application of primary and secondary metabolites.

Course Contents:

Module I
Carbohydrates Metabolism – I
Anaerobic processes in generating metabolic energy
Glycolysis, fates of pyruvate: Lactate and ethanol metabolism, regulation of glycolysis, glycogen mobilization, regulation of glycogen breakdown.
ETC and OP: Electron carriers in respiratory chain, OP, enzyme system for ATP synthesis, chemiosmotic coupling.
Carbohydrate Metabolism – II
Gluconeogenesis. Ethanol consumption and gluconeogenesis, reciprocal regulation of glycolysis and gluconeogenesis, glycogen metabolism in humans, photosynthesis.

Module II: Lipid Metabolism
Utilization and transport of fat and cholesterol, lipoproteins, fatty acid oxidation, oxidation of unsaturated and odd numbered C chain, control of fatty acid oxidation, biosynthesis of fatty acids, fatty acid desaturation, control of fatty acid synthesis, variants of fatty acids synthesis that lead to antibiotics (polyketides), biosynthesis of TAG, biosynthesis of cholesterol.

Module III: Nitrogen Metabolism
Utilization of ammonia – GDH, GS, transamination, Biosynthetic of amino acids, amino acids degradation, detoxification and excretion of ammonia, urea cycle, transport of ammonia to liver, porphyrin and hememetabolism – The succinate-glycine pathway, Biological Nitrogen fixation.

Module IV: Nucleotide Metabolism
De novo and salvage pathway for synthesis of pyrimidine and purine nucleotides, purine degradation and clinical disorders of purine metabolism (Gout, lesh – nyhan syndrome, immuno deficiency), pyrimidine breakdown, reduction of ribonucleotides to deoxyribonucleotides, thymidylate synthetase – a target enzyme for chemotherapy.

Module V: Integration of cellular metabolism and hormonal regulation
Action of major hormones (insulin, glucagon, epinephrine) responses to metabolic stresses: starvation.

Module VI: Secondary Plant Metabolism
Importance of secondary metabolites, terpenes, classification, mevalonic acid pathway, phenolic compounds, shikimic acid pathway, alkaloids.

Examination Scheme:

<table>
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<th>Components</th>
<th>CT</th>
<th>Attendance</th>
<th>Assignment/Project/Seminar/Quiz</th>
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Text & References:

References:

- Biochemistry (Fifth Edition), Lubert Stryer
ADVANCED CELL BIOLOGY AND GENETICS

Course Code: MSB 102  Credit Units: 04

Course Objective:
Cell Biology and genetics plays a central role to connect the different fields of biotechnology, which is highly interdisciplinary. They incorporates elements of biology, maths, physics and chemistry with combination of computers and electronics. The objective of the present course is to understand the structure and function of the cellular and subcellular components of cells and tissues with the help of these recent techniques. Students are also exposed to phenomenon that regulates cell death and etiology of cancerous cells.

Course Contents:

Module I
Mendelian principles on inheritance; Chromosome theory of inheritance, linkage and chromosome mapping, interference and coincidence, cytological basis of crossing over.
Extrachromosomal inheritance; Mitochondrial and chloroplast genetic code
Chromosomal aberration and polyploidy
Concept of gene – classical and modern, psendoallelism, position effect, intragenic crossing over & complementation (cistron, recon & nutron) Benzer’s work on r II locus in T2 bacteriophage.
Population genetics- Hardy weinbergs selection , k and r selection

Module II: Cell Organelles
Structure of nuclear envelope, nuclear pore, complex, transport across envelope; regulation of nuclear import
Targeting proteins to endoplasmic reticulum, signal recognition and receptor, protein folding and processing in ER protein export from ER; Protein sorting and export from Golgi Apparatus; SNARE hypothesis; Protein import into Mitochondria, mitochondrial genome; Import and sorting of chloroplast protein, photorespiration; cell-cell interaction.

Module III
Structure and organization of actins filaments; Actins, myosin muscle contraction, Microtubule-structure and assembly, cilia, flagella-structure.

Module IV
Modes of cell signaling, steroid hormone receptors, peptide hormones and growth factor, plant hormones, G-protein coupled receptors; receptor – protein tyrosine kinase, c- AMP pathway of signal transduction; c GMP, phospholipids and calcium ions, Ras, Raf, MAP kinase pathway, JAK –STAT pathway, Integrin signaling, Hedgehog and Wnt pathways, Apoptosis – role of caspases.

Module V: Cancer biology
Types of cancer; development of cancer, cells; Oncogenes, protooncogenes, function of oncogene products, tumor suppressor genes, function of tumor suppression gene products, role of oncogene and tumor suppressor gene in development, molecular diagnosis of cancer.

Module VI: Cell Cycle
Phases of eukaryotic cell cycle; Cell cycle regulation, checkpoints in cell cycle; regulators of cell cycle inhibitors of cell cycle, stem cells – properties and medical application.

Examination Scheme:

<table>
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<th>Components</th>
<th>CT</th>
<th>Attendance</th>
<th>Assignment/ Project/Seminar/Quiz</th>
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Text & References:

Text:
- Cell and Molecular Biology, DeRobertis, B. J. Publication Pvt. Ltd
- Principles of Genetics, E J Gardner, John Wiley & Sons Inc.

References:
- Cell in Development and Inheritance, E.B. Wilson, Macmillan
• Developmental Biology, S.F. Gilbert, Sinauer Associates Inc.
• Cell and Molecular Biology, Gerald Karp, John Wiley and Sons Inc.
• Principles of Genetics, D.P. Snustad & M.J. Simmons, John Wiley and Sons Inc
Course Objective:
To acquaint the students about the microbiology and role of various microorganisms in different biotechnological applications, various techniques for their cultivation and control.

Course Contents:

Module I: Introduction to microbiology
Bacteria – Morphology and classification. Abnormal forms of bacteria, archaebacteria, mycoplasma and PPLO, cultivation of bacteria – nutritional requirements of micro organism, physical requirements, different types of media & their preparations. Isolation of pure cultures, maintainance and preservation of the pure cultures. Culture characteristics – Bacterial growth – Growth curve, batch and continuous cultures di auxic and synchronous growth Enumeration of cells by direct and indirect methods,

Module II: Control of micro-organisms
Concept of sterilization and disinfection. Physical and chemical methods of control.Chemothterapeutics – mode of action of antibiotics, Penicillin, ampicillin, sulfonamide, vancomycin, streptomycine, tetracycline, chloramphenicol, antifungals, antiviral etc.

Module III: Microbial genetics

Module IV: Medical microbiology
Normal microflora of host, host parasite interactions, mechanisms of pathogenesis, and clinical manifestations associated with medically-important pathogenic microorganisms (bacteria, fungi, parasites, and viruses), applications of the basic principles of microbiology in effective diagnosis, treatment and prevention of infectious disease

Examination Scheme:

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Text & References:

Text:
- General Microbiology, R.Y. Stanier, J.L. Ingraham, M. L. Wheelis and P.R. Painter, Macmillian

References:
- Principles of Microbiology, R.M. Atlas, Wm C. Brown Publisher.
- The microbes – An Introduction to their Nature and Importance, P.V. Vandenmark and B.L. Batzing Benjamin Cummings.
- The Microbial World, Roger Y. Stanier, Prentice Hall
- Microbiology, Tortora, Funke and Chase, Benjamin & Cummings
Course Code: MSB 104  Credit Units: 03

Course Objective:
Biophysics aims at investigating the structure and operations of living systems with the aim of the concepts theory and methodology of both experimental and theoretical physics, which is utmost, required for connecting the fundamental principles and their applications with life sciences. The students will be exposed to different instruments in order to develop competency and expertise in experimental techniques methodology and safe laboratory practice.

Course Contents:

Module I: Membrane Biophysics
Genesis of membrane potential in nerve & membrane, Nerst & Goldman equation, Patch Clamp and Voltage – Clamp techniques for measuring membrane potential.

Module II: Radiation Biophysics
Tracer Technology, Dose response relationship, Radioisotopes in Diagnostics and Biotechnology, Geiger-Mueller Counter, Scintillation Counters.

Module III: Non-Radioactive tracer Technology
Metabolic and physiological tracer techniques, non-radioactive labels, labeling and detection methods using fluorescent molecules.

Module IV: Spectroscopy and X-ray crystallography
UV-Vis spectrophotometry, Mass spectrometry, MALDI and ESI, NMR, ESR, X-Ray Crystallography.

Module V: Electrophoresis
Paper and gel electrophoresis, Immuno-electrophoresis, Isoelectric Focusing, Capillary electrophoresis.

Module VI: Chromatography and Cetrifugation
Thin layer, Affinity, gel permeation, ion exchange chromatography, GLC, HPLC, Ultracentrifugation.

Examination Scheme:

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Text & References:

Text:
- Practical Biochemistry, Principles & Techniques, Keith Wilson and John Walker.

References:
- Bioinstrumentation, Webster.
- Principles of Fermentation Technology, P.F. Stanbury, A. Whitaker & S.J. Hall.
- Microscopic Techniques in Biotechnology, Michael Hoppert.
- Principles & Practice of Bioanalysis, Richard F. Venn.
CELL BIOLOGY AND GENETICS LAB

Course Code: MSB 120      Credit Units: 02

Course Contents:

Module I
Cell fractionation and separation of cell organelles by ultra centrifugation.

Module II
Isolation of chloroplast from spinach and study of electron transport chain.

Module III
Isolation of mitochondria and study of electron transport chain.

Module IV
Study of apoptosis by TUNEL method.
Site directed mutagenesis
Mutation detection and analysis
Mitosis
Meiosis

Examination Scheme:

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BIOCHEMISTRY LAB

Course Code: MSB 121  Credit Units: 02

Course Contents:

**Module I: Proteins**
- Identification of protein by Biuret test.
- Quantitation of protein by Bradford method
- Separation of proteins by SDS-PAGE

**Module II: Enzyme**
- Enzyme activity study of serum alkaline phosphatase

**Module III: Nucleic Acid**
- Biochemical estimation of DNA
- Biochemical estimation of RNA
- Separation of DNA on Agrose gel.

**Module IV: Carbohydrate**
- Biochemical estimation of blood sugar

**Module V: Lipids**
- Blood Cholesterol estimation.

**Examination Scheme:**

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TERM PAPER- I

Course Code: MSB 130  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:
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

**References**
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**
University of Hawai'i at Manoa, Honolulu.

**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.)
COMMUNICATION SKILLS – I

Course Code: MSB 141  Credit Units: 01

Course Objective:
The Course is designed to give an overview of the four broad categories of English Communication thereby enhance the learners’ communicative competence.

Course Contents:

Module I: Listening Skills
Effective Listening: Principles and Barriers
Listening Comprehension on International Standards

Module II: Speaking Skills
Pronunciation and Accent
Reading excerpts from news dailies & magazines
Narrating Incident; Story telling.
Extempore & Role Plays

Module III: Reading Skills
Vocabulary: Synonyms, antonyms, diminutives, homonyms, homophones
Idioms & phrases
Foreign words in English

Module IV: Writing Skills
Writing Paragraphs
Précis Writing
Letter writing
Coherence and structure
Essay writing

Module V: Activities
News reading
Picture reading
Movie magic
Announcements

Examination Scheme:

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

Text & References:

- Working in English, Jones, Cambridge
- Business Communication, Raman – Prakash, Oxford
- Speaking Personally, Porter-Ladousse, Cambridge
- Speaking Effectively, Jermy Comfort, et.al, Cambridge
Course Objective:
This course aims at imparting an understanding of:
Self and the process of self exploration
Learning strategies for development of a healthy self esteem
Importance of attitudes and their effect on work behaviour
Effective management of emotions and building interpersonal competence.

Course Contents:

Module I: Understanding Self
Formation of self concept
Dimension of Self
Components of self
Self Competency

Module II: Self-Esteem: Sense of Worth
Meaning and Nature of Self Esteem
Characteristics of High and Low Self Esteem
Importance & need of Self Esteem
Self Esteem at work
Steps to enhance Self Esteem

Module III: Emotional Intelligence: Brain Power
Introduction to EI
Difference between IQ, EQ and SQ
Relevance of EI at workplace
Self assessment, analysis and action plan

Module IV: Managing Emotions and Building Interpersonal Competence
Need and importance of Emotions
Healthy and Unhealthy expression of emotions
Anger: Conceptualization and Cycle
Developing emotional and interpersonal competence
Self assessment, analysis and action plan

Module V: Leading Through Positive Attitude
Understanding Attitudes
Formation of Attitudes
Types of Attitudes
Effects of Attitude on Behaviour
Perception
Motivation
Stress
Adjustment
Time Management
Effective Performance
Building Positive Attitude

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:
- Towers, Marc: Self Esteem, 1st Edition 1997, American Media
• Covey, R. Stephen: Seven habits of Highly Effective People, 1992 Edition, Simon & Schuster Ltd.
• Dr. Dinkmeyer Don, Dr. Losoney Lewis, The Skills of Encouragement: St. Lucie Press.
FRENCH - I

Course Code: MSB 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, adjectif, 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: MSB 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, wohnwn, 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 Dipthongs

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

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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 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.

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Español, En Directo I A
- Español Sin Fronteras
Course Code: MSB 147
Credit Units: 02

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

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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 3\textsuperscript{rd} 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.

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C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:
- “Elementary Chinese Reader Part I” Lesson 1-10
ADVANCED MOLECULAR BIOLOGY

Course Code: MSB 201
Credit Units: 04

Course Objective:
The objective of the course is to provide a clear understanding of DNA (genetic material) so that they can manipulate it and understand basic tools and techniques involved in its manipulation. Strong foundation in molecular biology enables the students to familiarize themselves with Genetic engineering technology.

Course Contents:

Module I: DNA replication and repair
DNA polymerases in prokaryotes and eukaryotes; replication protein, replication fork; termination of replication DNA repair, photo reaction, base excision repair, nucleotide excision repair, transcription coupled repair, mismatch repair, error prone repair, recombinational repair.

Module II: Transcription of DNA
Transcription in prokaryotes and eukaryotes, RNA polymerase – Composition and function; transcription mechanism; transcription factor and their role, inhibition of RNA synthesis.

Module III: Processing of RNA
Procession of ribosomal and transfer RNA’s processing of mRNA-5’cap formation; 3’ polyadenylation; RNA splicing, RNA editing, RNA degradation.

Module IV: Translation
Translation mechanism in prokaryotes and eukaryotes; ribosomes, initiation of translation, elongation, termination, amino acid activation; inhibitors, post translation modification of protein.

Module V: Regulation of gene expression
Regulation in prokaryotes – repressors and negative control, positive control, role of c AMP, Ampreceptor protein, lac, tryp, His and ara operons, Regulation in Eukaryotes=promoters and enhancers, transcriptional regulatory protein, transcriptional activators, eukaryotic repressor.

Module VI: Gene Silencing
Antisense molecules; Biochemistry of ribozyme, Hammer head, hairpin ribozymes. Application of antisense and ribozymes in genetic engineering.

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Text & References:

Text:
- Concepts of Genetics, W.S. Klug, and M.R. Cummings 2004, Pearson Education

References:
- Genome, T.A. Brown, John Willey & Sons Inc.
- Molecular Biology of the Cell by Alberts Bruce, Bray Demos, and Watson James D.
- Gene VIII, Benjamin Lewin 2005, Oxford University Press
- Introduction to Practical Molecular Biology, P.D. Dabre, John Wiley and Sons Inc.
Course Objective:
The plant biotechnology course basically meant for understanding the genomic organization, molecular & biochemical mechanism, Genetic engineering in plants and basic techniques of plant tissue culture in plants along with the latest ongoing research on the different aspects of plants.

Course Contents:

Module I: Plant Cell and Tissue Culture Techniques
Terms & definitions, History of Plant tissue culture, organogenesis embryogenesis and Micropropagation. Tissue Culture as a source of genic variability- haploids and triploids plants and their utilization. Somaclonal variation, Embryo rescue and Endosperm culture with their practical applications, role of phytohormones, protoplast isolation and culture, somatic hybridization and cybridisation.

Module II
Genetic engineering in plants, selectable markers, reporter genes and promoters used in plant vectors. Mechanisms of T-DNA transfer to plants, Ti plasmid vector for plant transformation. Microprojectile bombardment mediated transformation. Electroprooration, microinjection, Transgenics, Molecular techniques for the identification of transgenics. Protoplast transformation and chloroplast transformation

Module III
Plant genome organization, gene families in plants. Organization of chloroplast and mitochondrial genomes, chloroplast & mitochondrial encoded genes for their proteins, delay of fruit ripening

Module IV

Examination Scheme:

<table>
<thead>
<tr>
<th>Components</th>
<th>CT</th>
<th>Attendance</th>
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</table>

Text & References:

Text:
- An Introduction to Plant Tissue Culture, M.K. Razdan, Oxford and IBH Publishing

References:
- Plant Biotechnology and Transgenic Plants, K.M.O. Caldenty, W.H. Barz and H.L. Wills, Marcel Dekker
- Plant Cell & Tissue Culture for the production of Food Ingredients bt T-J Fu, G. Singh and W.R. Curtis, Kluwer Adacemic/Plenum Press
- Plant Tissue Culture: Theory & Practice, S.S. Bhojwani and M.K. Razdan, Elsevier Health Sciences
ADVANCED ANIMAL BIOTECHNOLOGY

Course Code: MSB 203
Credit Units: 04

Course Objective:
It aims to promote an understanding and knowledge of animal cell structure and function with particular emphasis on in vitro proliferation and differentiation.

Course Contents:

Module I
Introduction of animal cell culture—culture substrate, culture media, maintenance of cell lines.

Module II
Enzyme therapy—introduction, therapeutic enzymes—Dnase I, adenosine deaminase, dihydrolfoate reductase, streptokinase

Module III
DNA based vaccines, subunit vaccines, peptide vaccines, recombinant DNA vaccines, attenuated vaccines, vector vaccines.

Module IV
Gene therapy—SCID, cystic fibrosis, familial by hypercholesteremia, prospects and problem, Biotechnological applications for HIV diagnostics and therapy.

Module V
Transgenic animal production and application in production of therapeutic proteins, gene Knock out and mice model for human genetic disorder, baculo virus for expression of foreign gene mapping of human genome

Examination Scheme:

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</table>

Text & References:

- Culture of Animal Cells, R.I Freshney, Wiley-Leiss
- Animal Cell Culture – A Practical approach, J.R.W. Masters, Oxford
- Animal Cell Culture Techniques, M. Clynnes, Springer Verlag
- Cell Culture LabFax, M. Butler and M. Dawson, Bios scientific Publications Ltd.
- Cell Growth and Division – A Practical approach, R. Basega, IRL Press
- Comprehensive Biotechnology, Moo-Young, Alan T. Bullm Howard Dalton, Panima Publication
Course Objective:
The objective of this course is to familiarize the students with the processes and microorganism that can be employed for a cleaner environment. The students will be applying basic knowledge of microbiology for developing the practices for a cleaner environment, water, fuel, fertilizer, pesticides etc. The course also aims to make the students aware of legislation and acts prevalent to control the degradation of our ecosystem.

Course Contents:

Module I
Treatment of municipal wastes and industrial effluents (Physico-Chemical, biological analysis of waste water), Rr. Sec and test waste water treatment sludge treatment and disposal treatment of wastes from paper, textile, dairy, petrochemical and pharmaceutical industry.

Module II
Bioremediation and phytoremediation of toxic compounds like pesticides, hydrocarbons, polymers, surfactants, biotransformation and bioaccumulation

Module III
Renewable and non-renewable energy resources, clean fuel technology, biofuels.

Module IV
Biofertilizers and biopesticides – a cleaner agricultural practice, concept of N₂ fixation, azolla, cyanobacteria, Rhizobium and VAM as biofertilizers.

Module V
Biomining – microbe assisted microbial leaching, bioaccumulation and bio sorption Biosensors and biomarkers for ecotoxicity measurement, EIA and Environmental audit.

Module VI
Principles in ecotoxicology; animal toxicity tests; statistical concepts of LD₅₀; dose-effect and dose response relationship; frequency response and cumulative response; Biological and chemical factors and influence toxicity; global dispersion of toxic substance; dispersion and circulating mechanisms of pollutants; Aquatic toxicity tests; statistical tests; response of planktons to toxicants; EC₅₀;

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Text & References:

Text:
- Environmental Biotechnology – Concepts and Applications, Hans-Joachim Jordening and Jesef Winter
- Introduction to Environmental Biotechnology, Milton Wainwright

References:
- Waste Water Engineering, Metcalf and Eddy. Publisher: Tata McGraw hill
- Agricultural Biotechnology, S.S. Purohit
- Environmental Microbiology: Methods and Protocols, Alicia L. Ragout De Spencer, Jonh F.T. Spencer
- Principles of Environmental Engineering, Gilbert Masters
Course Code: MSB 220  
Credit Units: 02

Course Contents:

1. Isolation of genomic DNA from prokaryotic and eukaryotes.
2. Isolation of plasmid.
3. Study of DNA protein interaction.
5. Study of DNA methylation.
6. Study of DNA repair mechanism.
7. In vitro study of translation

Examination Scheme:

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<th>Attendance</th>
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ADVANCED ANIMAL BIOTECHNOLOGY LAB

Course Code: MSB 221
Credit Units: 02

Course Contents:

1. Histological study of important animal tissues.
2. Estimation of enzyme activity from animal tissues.
3. Study of toxicity on invitro model.
4. Culture and maintenance of animal cell lines.
5. Culture of chicken fibroblasts.
6. Invitro expression of proteins in animal cell lines.

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ADVANCED PLANT BIOTECHNOLOGY LAB

Course Code: MSB 222
Credit Units: 02

Course Contents:

Module I
Tissue culture lab and organization.
Sterilisation of glasswares, tools and equipments.

Module II
Preparation of stocks and media.
Surface sterilization of various explants

Module III
ORGAN CULTURE

Module IV
ClIus culture

Module V
Anther culture

Module VI
Embryo culture
Protoplast isolation and culture

Examination Scheme:

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</table>
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:
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

References
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
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
Journal of consumer research 19, 180-197.

Electronic book
Web, http://www.aber.ac.uk/media/Documents/S4B/.

Electronic journal articles
Watts, S. (2000) Teaching talk: Should students learn 'real German'? [HTML document]. German as a Foreign

Other websites
Verterhus, S.A. (n.y.), Anglicisms in German car advertising. The problem of gender assignment [HTML

Unpublished papers
performed by native Japanese speakers. Unpublished paper, Department of English as a Second Language,
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.)
COMMUNICATION SKILLS - II

Course Code: MSB 241      Credit Units: 01

Course Objective:
To enrich the understanding of English language and communication, structure, style, usage, and vocabulary for global business purposes.

Course Contents:

Role and purpose of communication: 7 C’s of communication
Barriers to effective communication
Enhancing listening
Forms of Communication: one-to-one, informal and formal

Module II: Verbal Communication (Written)
Business Letter
Social correspondence
Writing resume and Job applications

Module III: Speaking skills
Conversational English
Guidelines to give an effective presentation
Activities to include:
Presentations by students
Just a minute

Examination Scheme:

<table>
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<th>Components</th>
<th>CT1</th>
<th>CT2</th>
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</table>

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

Text & References:

- Business Communication, Raman – Prakash, Oxford
- Textbook of Business Communication, Ramaswami S, Macmillan
- Speaking Personally, Porter-Ladousse, Cambridge
Course Objective:
This course aims at imparting an understanding of:
Process of Behavioural communication
Aspects of interpersonal communication and relationship
Management of individual differences as important dimension of IPR

Course Contents:

Module I: Behavioural Communication
Scope of Behavioural Communication
Process – Personal, Impersonal and Interpersonal Communication
Guidelines for developing Human Communication skills
Relevance of Behavioural Communication in relationship management

Module II: Managing Individual Differences in Relationships
Principles
Types of issues
Approaches
Understanding and importance of self disclosure
Guidelines for effective communication during conflicts

Module III: Communication Climate: Foundation of Interpersonal Relationships
Elements of satisfying relationships
Conforming and Disconfirming Communication
Culturally Relevant Communication
Guideline for Creating and Sustaining Healthy Climate

Module IV: Interpersonal Communication
Imperatives for Interpersonal Communication
Models – Linear, Interaction and Transaction
Patterns – Complementary, Symmetrical and Parallel
Types – Self and Other Oriented
Steps to improve Interpersonal Communication

Module V: Interpersonal Relationship Development
Relationship circle – Peer/ Colleague, Superior and Subordinate
Initiating and establishing IPR
Escalating, maintaining and terminating IPR
Direct and indirect strategies of terminating relationship
Model of ending relationship

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
- Beebe, Beebe and Redmond; Interpersonal Communication, 1996; Allyn and Bacon Publishers.
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: MSB 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 propositions 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 Dallapiazza et al, Tangram Aktuell A1/1,2
- Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs
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

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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
Course Code: MSB 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
DRUG DESIGN AND DEVELOPMENT

Course Code: MSB 301  Credit Units: 03

Course Objective:
The above course will be aimed to identify and design drugs that could be potentially useful in the identification of the candidate drugs, which have efficacy in cell culture or animal models, and thus the most effective compounds could be employed based on the above results for being moved through preclinical studies to clinical trials.

Course Contents:

Module I: Drug targets classification
DNA, RNA, post-translational, processing enzymes, metabolic enzymes involved in nucleic acid synthesis, G-protein coupled receptors (monomeric transmembrane proteins), small molecule receptors, neuropeptide receptors, ion channels (monomeric multi-transmembrane) proteins, ligand-gated ion channels (oligomeric transmembrane proteins), transporters (multi-transmembrane proteins).

Module II: Target discovery and validation strategies
Genomics (new target discovery), biological activity directed and other types of screening, natural products, combinatorial chemistry; General overview of validation techniques.

Module III: Structure-based design
Drug design to discovery and development, drug metabolism, toxicity and pharmacokinetics, toxicology considerations, problems and drawbacks on drug discovery and development.
‘de novo’ design methodologies : indirect drug design, pharmacophore development and receptor mapping, combinatorial libraries and new strategies and recent technologies in drug design.

Module IV: Basic concepts of Drug Delivery
Basic terminologies in drug delivery and drug targeting, Drug release, Drug targeting, Doses forms, Various routes of administration of drugs (just introduction), Strategies for enhanced therapeutic efficacies (Basic principles)

Module V: Delivery of Genetic material
Basic principles of gene expression, Viral and nonviral vectors in gene delivery, Clinical applications of gene therapy and antisense therapy
New generation technologies in Drug delivery and targeting
Nanotechnology / Nanobiotechnology, Use of biosensors and challenge of chronopharmacology, Microchips and controlled drug delivery, Genetically engineered cell implants in drug deliver.

Examination Scheme:

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Text & References:

Text:
- Drug Delivery and Targeting, A.M. Hillery, A.W. Lloyd and J. Swarbrick, Harwood Academic Publisher
- Pharmaceutical Dosage Forms and Drug Delivery Systems, H.C. Ansel, L.V. allen and N.G. Popovich, Lippincott Williams and Wilkins Publisher

References:
- Principles of Medicinal Chemistry, W.O. Foye, T.L. Lemke, and D.A. Williams, Williams and Wilkins
- Drug Delivery: Engineering Principles for Drug Therapy (Topics in Chemical Engineering), W.M. Saltzman, Oxford University Press.
- Handbook of Biodegradable Polymers (Drug Targeting and Delivery), A.J. Domb, J. Kost and D.M. Wiseman, Dunitz Martin Ltd.
PHARMACEUTICAL BIOTECHNOLOGY

Course Code: MSB 302      Credit Units: 03

Course Objective:
The objective of this course to apply the basic concepts in the specific field of Pharmaceutical Biotechnology Industry. The student will gain insight into the working of a pharma industry, various classes of biotech products and the regulations governing production and marketing of pharmaceutical products.

Course Contents:

Module I
Introduction and History, Drug Discovery Process, Methods of Drug Discovery and development.

Module II
Physicochemical Properties in Relation to Biological Action – Effects of route of administration, Drug Targets, Validation techniques of Pharmaceutical targets, Pharmacokinetics and pharmacodynamics of drugs, Drug Toxicity.

Module III
DNA vaccines, Vaccines & Monoclonal antibody based pharmaceuticals, Antibiotics, Characterisation and Bioanalytical aspects of Recombinant proteins as pharmaceutical drugs.

Module IV
Formulation of Biotechnological Products, Drug Delivery, Examples of some Biotechnological products in clinical development

Module V: Regulations
Role of FDA, ICH Guidelines, cGMP, The Regulation of Pharmaceutical Biotechnological Products and Ethical Issues.

Examination Scheme:

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Text & References:

Text:
- Pharmaceutical Biotechnology - by Oliver, Kayser, Rainer Helmut Müller Series: Pharmaceutical Biotechnology , Vol. 9 Pearlman, Rodney; Wang, Y. John (Eds.) 1996,

References:
IPR, BIOSAFETY AND BIOETHICS

Course Code: MSB 303      Credit Units: 03

Course Objective:
The aim of this course is to develop the understanding of relevance, business impact and protection of Intellectual property along with the types of Intellectual Property Rights; Patents, Copyrights, Trademarks, Industrial Designs, Geographical Indications and International Conventions, Biosafety and Bioethics

Course Contents:

Module I

Module II

Module III
Copyright - Objectives of copyright, Rights conferred by registration of copyright, Infringement of copyright

Module IV
Trademarks-Basic Principles of Trademark, Rights conferred by Registration of Trademark, Infringement of Trademark

Module V
Geographical Indications-Objectives of Geographical Indications, Rights conferred, Infringement of Geographical Indications, International Position, Indian Position, Bioprospecting and Biopiracy.

Module VI
Biosafety and Bioethics Management-Key to environmentally responsible use of biotechnology. Cartagena Protocol on Biosafety, Ethical implications of Biotechnological products and techniques.

Examination Scheme:

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Text & References:

Text:
- Intellectual Property Rights by Brigitte Anderson, Edward Elgar Publishing
- Intellectual Property Rights and the Life Sciences Industries by Graham Dutfield, Ashgate Publishing

References:
- WIPO Intellectual Property Handbook
- Intellectual Property Rights by William Rodelph Cornish, David Clewelyn
- Journals and Current magazines
CLINICAL BIOTECHNOLOGY

Course Code: MSB 304
Credit Units: 03

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
Clinical significance of biochemical tests and their role in the diagnosis and monitoring of disease, Clinical characteristic of disease. Role of pharmacological testing in clinical management of disease. Role of clinical biochemistry in detection, diagnosis and therapy of genetically inherited diseases and cancer.

Module II
Genetic disease, type of inheritance, single-gene and multifactorial inheritance, example of genetic diseases. Therapeutic intervention in blood disorder by stem cell transplantation/gene therapy.

Module III

Module IV
Current topics in animal and cellular and molecular biology- cellular and molecular mechanism of human diseases, transgenesis-animal models of human diseases, animals for pharmaceutical protein production.

Module V
Manipulation of reproduction and development for application in medicine, agriculture, aquaculture and conservation.

Module VI
Management of Clinical Data.

Examination Scheme:

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Text & References:

Text:

References:
- Principles of Physical Biochemistry, K.E. Van Holde, W.C. Johnson, Prentice Hall
- Tools of Biochemistry, T.G. Cooper, John Wiley and Sons Inc.
- Enzymes Biochemistry, Biotechnology, Clinical Chemistry, Trevor Palner
- Biochemistry (Fifth Edition), Lubert Stryer
- Physical Biochemistry, David FreiFeider
- Industrial Enzymes & their applications, H. Uhlig., John Wiley and Sons Inc.
NANOBIO TECHNOLOGY

Course Code: MSB 305       Credit Units: 03

Course Objective:
Nanotechnology is one of the most important emerging fields in today’s scenario and holds tremendous potential in the field of Biotechnology. The objective of this course is to introduce this emerging field to the students so that they can apply this to develop new drug delivery systems and biomarkers.

Course Contents:

Module I: Introduction to Nanotechnology
Overview of nanotechnology developments, different nanostructured materials, properties related to nanostructured surfaces, the rules governing the health and safety standards related to the use of chemicals and nanomaterials and the physical environment required for working with nanomaterials. laws and principles governing the functions of numerous instruments found in nanobiotechnology. atomic theory and bonding, quantum theory, electromagnetic properties of matter, molecular structure and macromolecules, intramolecular and intermolecular forces, solubility and solvation, thermodynamics and fluid behaviour.

Module II: Nanostructured Materials
The choice of nanomaterials to be used in the context of a bionanostructured system for either development or production. carbon nanotubes and nanowires, the physical characteristics of nanomaterials and nanostructured surfaces, quantum dots, nanostructured thin films, pattern surfaces, composites, magnetic nanoparticles, scaffolds, gels and drug delivery systems.

Module III: Nanobiostucture Systems – Drug Delivery
The assembly of drug delivery systems, preparation and assembly of pharmaceutical molecule into nanometric material within the parameters of GLP and health and safety standards.

Module IV: Nanobiostucture Systems - Biosensor
The functional assembling of the components of a nanostructured biosensor, putting together a bioreceptor and putting together nanometric support and a signal transduction system. Assembly and production of a nanobiosensor.

Examination Scheme:

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Text & References:

- Molecular Engineering of Nanosystems by Edward A. Rietman.
- Nanobiotech- Concepts, Applications and Perspectives, Christot, Chad Mirkin.
- Nanoscale Science and technology, Robert W Kelsall, Mark Geoghegan, Ian W Hamley.
- Nano surface chemistry, Morton Rosoff.
Course Objective:
The course aims to provide an understanding of the principles and application of proteins, secondary metabolites and enzyme biochemistry in therapeutic applications and clinical diagnosis. The theoretical understanding of biochemical systems would certainly help to interpret the results of laboratory experiments.

Course Contents:

Module I: Enzymes
Introduction and scope, Nomenclature, Mechanism of Catalysis, enzyme catalysis in organic media, Industrial applications.

Module II: Enzyme Kinetics
Single substrate steady state kinetics; King-Altman's method; Inhibitors and activators; Multi-substrate systems; Effect of pH and temperature; Allosteric enzymes. Thermodynamic explanation for transition complex formation, limitations of Michaelis – Menten equation, LB plot method to study enzyme kinetics, effect of pH And temperature on kinetics, allosteric enzyme kinetics, models as WMC, KNF with examples of ACTase and Hb.

Module III: Immobilization of Enzymes
Advantages, Carriers, adsorption, covalent coupling, cross-linking and entrapment methods, Micro-environmental effects

Module IV: Enzyme Reactors
Reactors for batch/continuous enzymatic processing, Choice of reactor type: idealized enzyme reactor systems; Mass Transfer in Enzyme Reactors: Steady state analysis of mass transfer and biochemical reaction in enzyme reactors.

Module V: Bio-process Design
Physical parameters, reactor operational stability, Immobilized cells.

Module VI: Challenges and future trends
Catalytic antibodies and Non-protein biomolecules as catalysts, Biocatalysts from Extreme Thermophilic Archaea and Bacteria.

Examination Scheme:

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Text & References:

Text:

References:
- Enzymes: A Practical Introduction to Structure, Mechanism and Data Analysis, R.A. Copeland, John Wiley and Sons Inc.
- Enzymes Biochemistry, Biotechnology, Clinical Chemistry, Trevor Palner
- Industrial Enzymes & their applications, H. Uhlig, John Wiley and Sons Inc
ADVANCED IMMUNOLOGY

Course Code: MSB 307  Credit Units: 04

Course Objective:
The aim to teach immunology and immuno technology to the students for their better understanding of immune system, types and mechanism of immunity, immune responses, their tolerance and suppression as well as tools and techniques involved in diagnosis and identification of immune related diseases.

Course Contents:

Module I
Types of immunity - innate, acquired, passive and active physiology of immune response – MI and CMI specificity and memory. Antigen, antibody reactions. Antigens types Hapten, immunoglobulin structure, distribution and function

Module II

Module III

Module IV
Introduction to tumor immunology, autoimmune disorders and immunology of infectious diseases. Antigen antibody reactions in vitro methods agglutination precipitation, complement fixation, immunofluorescence, immunoelectrophoresis, ELISA, Radio immuno assays, In vitro methods, skin tests and immune complex tissue demonstrations. Applications of these methods in diagnosis of microbial infections, Vaccines

Examination Scheme:

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Text & References:

Text:
- Kuby Immunology, R.A. Goldsby, T.J. Kindt and B.A. Osborne, Freeman
- Basic Immunology, A.K. Abbas and A.H. Lichtman, Saunders W.B. Company

References:
- Immunology (Sixth Edition), Roitt, Brostoff, Male, Panima Publication
- Fundamentals of Immunology, W. Paul, Lippincot Williams and Wilkins
- Immunology, W.L. Anderson, Frence Creek Publishing (Blackwell)
- Immunology: A Short Course, E. Benjamin, R. Coico and G. Sunshine, Wiley-Leiss Inc.
- Immunology, Poit, Mosby – Yearbook Inc.
- Perkin Elmer Antibody Manual
- Production of Monoclonal Antibodies – Detailed Protocol, G.K. Lewis, University of Maryland
Course Objective:
The objective of the course is to apply the principles of biochemical engineering in large scale cultivation of microorganism for production of important products.

Course Contents:

Module I
Advantage of bioprocess over chemical process. Basic principle in bioprocess technology. Media formulation sterilization, thermal death kinetics, batch and continuous sterilization system. Sterilization of air, fibrous filters, etc.

Module II
Transport phenomena in bioprocess – Mass transfer, mass transfer co-efficient for gases and liquids. Rate of oxygen transfer. Determination of oxygen transfer coefficient. Rheological properties of intermedium. Biological heat transfer, Heat transfer coefficients. Bioprocess control and monitoring variables such as temperature, agitation, pressure etc. On line measurement. On/off control. PID control computers in bio process control systems and down stream processing.

Module III
Kinetics of microbial growth, substrate utilization and product formation Batch, Fed-batch, CSTR types of reactors – CSTR, tower, airlift, bubble column, packed bed, immobilized cells, Control and monitoring, online and off-line control, Computers in bioprocess control systems.

Module IV
**Industrial production of enzymes:** cellulase, amylase, protease; organic acids: citric acid, acetic acid, lactic acid; ethanol, biomass, antibiotics: classification, penicillins, tetracyclins, chloramphenicol; vitamins: B12, riboflavin, fermented dairy products.

**Ethanol:** Production by batch, continuous and cell recycle adopted by various technologies practiced in Indian distilleries using molasses and grains computation of fermentation efficiency, distillation efficiency and overall efficiency of ethanol production, recovery, uses, glucose effect etc. power alcohol – definition, uses, merits and demerits of various technologies for its production.

**Antibiotics:** Classification, penicillin, tetracycline, streptomycin, cephalosporin. Various penicillin as precursor and ‘R’ – side chain, penicillianase, 6-APA, pencillin production, harvest and recovery, uses of various forms etc.

**Streptomycin:** Chemical structure, production, harvest and recovery, uses by-product of streptomycin fermentation etc.

**Biomass:** Bakers and distillers yeast production using various raw materials, “bio” factors for growth, Crabtree effect, harvesting, different forms and uses.

What are mushroom, different forms of common mushroom production from agro based raw materials and uses.

Examination Scheme:

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Text & References:

**Text:**
- Principles of Fermentation Technology, Salisbury, Whitaker and Hall, Aditya Text Pvt. Ltd.
- Industrial Microbiology, Casida, New Age International
- Industrial Microbiology, Prescott and Dunn, C.B.S. Publishers

**References:**
- Biochemical Engineering, Bailley and Ollis.
- Principles of Biochemical Engineerin, Humphrey.
ADVANCES IN GENETIC ENGINEERING

Course Code: MSB 309
Credit Units: 03

Course Objective:
A complete understanding of molecular techniques like DNA sequencing, restriction mapping, PCR, etc. for the cloning and expression of genes can be obtained by undertaking the present course. The implication and successful application of biotechnology largely depend on these advanced molecular techniques. Thus, the objective of this course is to familiarize the students with all practical tools and techniques required for creating a recombinant DNA molecule and transforming the appropriate host cell to check the expression of recombinant DNA. The aim of this course is also to enlighten the students with the recent advancement in stem cell research.

Course Contents:

Module I
Vectors for cloning- plasmids, phagemids, Cosmids, bacteriophages, BAC,YAC, vectors for eukaryotes.

Module II
Obtaining foreign gene of interest, use of restriction endo nuclease, restriction modification systems, difference between type I, II and III restriction in endo nuclease and restriction mapping, construction of cDNA, chemical synthesis of DNA. DNA modifying enzymes and their applications. Gene libraries: Genomic DNA and cDNA libraries. Blotting techniques and probe construction

Module III
DNA sequencing - Sanger method of DNA sequencing (Manual and automated), Maxam Gilbert method
PCR: Discovery, basic methodology, types and uses of PCR technology, chemical synthesis of DNA
Gene mapping techniques RFLP, advantages over genetic mapping, uses, RAPD, LCR.

Module IV
Application of genetic engineering in medicine, forensic science, agriculture and production of recombinant proteins.

Examination Scheme:

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Text & References:

- Developmental Biology, 6th Edition, Scott F. Gilbert
- Recombinant DNA, J.D. Watson et al, W.H. Freeman and Company
BIOPROCESS AND ENZYME TECHNOLOGY LAB

Course Code: MSB 320      Credit Units: 02

Course Contents:

Module I
Isolation of industrially important microorganisms for microbial processes.
Determination of Thermal Death Point and Thermal death time of microorganisms for design of a sterilizer
Determination of growth curve of a supplied micro organism and also determine substrate degradation profile and to compute specific growth rate and growth yield from the data obtained.

Module II
Comparative studied of ethanol production using different substrates.
Microbial production of antibiotics (Penicillin)
Production and estimation of alkaline protease
Sauer Krant fermentation

Module III: Downstream processing
Conventional filtration
Protein precipitation and recovery
Aqueous two-phase separation
Ion exchange chromatography
Gel filtration
Membrane based filtration i.e. Micro filtration and cross filtration in cross flow Modules.

Module IV
Isolation of Enzymes from plant and microbial sources.
Enzyme assay; activity and specific activity – determination of amylase, nitrate reductase, cellulose, protease.
Purification of Enzyme by ammonium sulphate fractionation.
Enzyme Kinetics: Effect of varying substrate concentration on enzyme activity
Effect of Temperature and pH on enzyme activity.

Module V
Production of enzyme on industrial scale using solid and state fermentation
Enzyme immobilization

Examination Scheme:

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GENETIC ENGINEERING LAB

Course Code: MSB 321 Credit Units: 02

Course Contents:

1. Study of gene expression in E.coli. (GFP cloning).
2. Study of Southern Hybridization.
3. Study of RFLP/RAPD.
4. Study of Western blotting.
5. Study of restriction digestion.
7. PCR amplification.

Examination Scheme:

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ADVANCED IMMUNOLOGY LAB

Course Code: MSB 322       Credit Units: 02

Course Contents:

1. Purification of immunoglobin G.
2. Study of antigen-antibody pattern (ODD).
3. Study of sandwich ELISA.
4. Study of haemeagglutination.
5. Study of immunoelectrophoresis.
6. Isolation and identification of rosette cells.
7. Antigen capture ELISA

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

**References**
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**
University of Hawai'i at Manoa, Honolulu.

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

**Final Evaluation**
(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.) 60%
COMMUNICATION SKILLS - III

Course Code: MSB 341      Credit Units: 01

Course Objective:
To initiate the learners with the basic mechanics of writing skills and facilitate them with the core skills required for communication in the professional world.

Course Contents:

Module I: Mechanics and Semantics of Sentences
Writing effective sentences
Style and Structure

Module II: Developing writing skills
Inter - office communication: Business Letter; E mails; Netiquette
Intra – office communication: Memos, Notices, Circulars, Minutes
Report Writing

Module III: Business Presentations
Planning, design and layout of presentation
Information Packaging
Audience analysis
Audio visual aids
Speaking with confidence
Case Studies

Examination Scheme:

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</table>

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

Text & References:

- Krishnaswamy, N, Creative English for Communication, Macmillan
BEHAVIOURAL SCIENCE - III
(LEADING THROUGH TEAMS)

Course Code: MSB 343 Credit Units: 01

Course Objective:
This course aims to enable students to:
Understand the concept and building of teams
Manage conflict and stress within team
Facilitate better team management and organizational effectiveness through universal human values.

Course Contents:

Module I: Teams: An Overview
Team Design Features: team vs. group
Effective Team Mission and Vision
Life Cycle of a Project Team
Rationale of a Team, Goal Analysis and Team Roles

Module II: Team & Sociometry
Patterns of Interaction in a Team
Sociometry: Method of studying attractions and repulsions in groups
Construction of sociogram for studying interpersonal relations in a Team

Module III: Team Building
Types and Development of Team Building
Stages of team growth
Team performance curve
Profiling your Team: Internal & External Dynamics
Team Strategies for organizational vision
Team communication

Module IV: Team Leadership & Conflict Management
Leadership styles in organizations
Self Authorized team leadership
Causes of team conflict
Conflict management strategies
Stress and Coping in teams

Module V: Global Teams and Universal Values
Management by values
Pragmatic spirituality in life and organization
Building global teams through universal human values
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:

- Organizational Behaviour, Davis, K.
- LaFasto and Larson: When Teams Work Best, 2001, Response Books (Sage), New Delhi
FRENCH - III

Course Code: MSB 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

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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 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 continuos 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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</table>

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- “Elementary Chinese Reader Part I, Part-2” Lesson 21-30
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
- 2 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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<td>Viva Voce</td>
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**Total**       100
**COMPUTATIONAL BIOLOGY**

**Course Code:** MSB 401  
**Credit Units:** 04

**Course Objective:**  
The objective is to describe how molecular data can be used to construct a phylogenetic tree and characterize the rates and causes of nucleotide substitutions. The aim is also to explain how a gene/protein family arises and the mechanisms, which underlie evolution at the molecular level.

**Course Contents:**

**Module I: Introduction to Computational Biology. History of Bioinformatics**

**Module II: Bioinformatics Fundamentals**

1. Major information Resources & Databases in Bioinformatics  
   - Information Resources: NCBI, EBI, ExPasy Entrez & SRS System  
   - Primary Sequence & Structure Databases: Genbank, SwissProt/Uniprot, EMBL, PIR, PDB, MMDB, NDB, CSD, KEGG etc.  
   - Derived (Secondary) Databases of Sequences and structure:  
     o Prosite, PRODOM, PRINTS, Pfam, BLOCK, INTERPRO etc.  
     o SCOP, CATH, DSSP, FSSP, RNAbase,  
   - Genome Databases (at NCBI, EBI, TIGR, SANGER), High-throughput genomics sequence (EST, STS, GSS), ENSEMBL.

2. Sequence File formats: fasta, genbank, embl, Swiss-prot, pdb, nibr, pir and multiple sequences formats (Aln, Mega, Pileup, phylip etc.)

3. Sequence Similarity Basics: Similarity, Identity, Homology, Scoring, selectivity/Sensitivity, Gap cost, Linear and Affine Gap Penalty, Basic of scoring system and matrices (PAM, BIOSUM, GONNET etc.)

4. Pairwise Sequences Alignment: Brute Force method, Dot matrix method, Global (Needleman-Wunsch) and Local Alignment (Smith-Waterman) using Dynamic programming.


**Module III: Computational Methods**

Scoring methods of MSA (sum of pair, Multidimensional DP, Progressive, Iterative, Probabilistic)  
Phylogenetics prediction methods: Basics, molecular clock, Substitution Models of evolution, Tree reconstruction methods (Distance based, character based method, statistical), Bootsstrapping.  
Suffix tree and its applications in Bioinformatics  
Gene Indentification Methods  
Predictive Methods using DNA and Protein sequences.  
Statistical Modeling: Log-likelihood, Bayesian network, Markov and hidden markov models.  
Clustering Algorithms: K-means, Hierarchical and Mixture of Gaussian.

**Module IV: Application and software tools**

Software and Programmes for sequence comparision and analysis.  
Phylogenetics analysis software.  
Molecular Structure drawing tool.  
Molecular modeling/Docking.  
Application of computational biology/Bioinformatics in Agriculture, Human health, Enviroment, Biotechnology, Molecular Biology, Neurobiology, Drug Designing, Veterinary Science.

**Examination Scheme:**

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Text & References:

Text:
• Bioinformatics: Sequence and Genome Analysis, D.W. Mount, Cold Spring Harbor Laboratory Press.

References:
• Biocomputing hypertext coursebook at http://www.techfak.unibielefeld.de/bcd/Curric/welcome.html/
• Computational Modeling of Genetic and Biochemical Networks, J.M. Bower and H. Bolouri, MIT Press
• Computational Molecular Biology: An Algorithmic Approach, P.A. Pevzner, MIT Press
• Essentials of Genomics and Bioinformatics, C.W. Sensen, John Wiley and Sons Inc.
• Introduction to Bioinformatics, T. Attwood and D. Parry-Smith, Prentice Hall
• Introduction to Computational Biology: Maps, Sequences and Genomes, M. Waterman, Chapman and Hall
• Sequence Analysis in Molecular Biology: Treasure Trove or Trivial Pursuit, G. V. Heijne and G.V. Heijne, Academic Press
RESEARCH METHODOLOGY AND REPORT WRITING

Course Code: MSB 402  Credit Units: 02

Course Objective:
To develop understanding of information and library science research issues in the domain of bioinformatics through review of journal articles, invited talks, and critical group discussions of methods. The main objectives for this course are to develop: familiarity with information and library science-oriented problems in the biomedical sciences, an understanding of research methods in the biomedical domain, critical thinking and evaluation skills and presentation and summarization skills.

Course Contents:

Module I
Introduction: Science, Scientific Field and Biological research. Role of a researcher in different stages of a project, Routes to research funding (academic and commercial)

Module II

Module III: Sampling techniques

Module IV
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)

Module V
Case studies of areas of current research. Formulating a research plan and its presentation

Examination Scheme:

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Text & References:

Text:
- Statistical Methods By S.P. Gupta

References:
- Research Methodology Methods and Techniques by C.R. Kothari
- Statistics(Theory and Practice) by B.N. Gupta
- Research Methodology Methods and statistical Techniques by Santosh Gupta
- Scientific journals and magazines
ADVANCED GENOMICS AND PROTEOMICS

Course Code: MSB 403  
Credit Units: 03

Course Objective:
The course helps in developing a detailed understanding of eukaryotic genome complexity and organization. Current research on the molecular basis of the control of gene expression in eukaryotic has developed a detailed understanding of techniques of gene diagnostics and DNA profile to acquire the fundamental of genomics and bioinformatics, it is desirable to have in depth study on these lines.

Course Contents:

PART I: GENOMICS

Module I: Introduction to Genomics
The human genome project “Anatomy of prokaryotic and eucaryotic genome: repetitive DNA Contentss of genoms.

Module II: Transcriptoms
Genome expression; RNA Contents, genetic mapping.

Module III
Microsatellite DNA markers, RFLP, DNA sequencing, polygomy, PCR.

Module IV: Micro array
DNA micro array marker, random primers, computational methods, transcriptomes.

PART-II: PROTEOMICS

Module V: Introduction to proteomics
Fundamental methods used in proteomics. 2-D gel electrophoresis + mass spectroscopy.

Module VI
Post translational protein modification

Module VII
Protein – protein interaction some examples

Examination Scheme:

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Text & References:

Text:
- Genes & Genomes, Maxine Singer and Paul Berg
- Genomes II, T.A. Brown

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
- www.panimatext.com
ADVANCED BIOSTATISTICS FOR BIOLOGISTS

Course Code: MSB 404 Credit Units: 03

Course Objective:
The course aims to develop competency and expertise in the application of statistical methods applied to biological data obtained in experimental techniques.

Course Contents:

Module I: Descriptive statistics
Measures of Central Tendency (Mean, Median, Mode), Measures of dispersion (Range, Mean Deviation, Standard Deviation, Quartile Deviation), combined mean and variance, covariance, Graphs (Bar Chart, Pie Chart, Box Plot, Histogram, Ogive, scatter plot)

Module II
Probability (Addition and Multiplication Theorem), Binomial, Poisson and Normal distribution. Correlation and linear regression.

Module III: Inferential statistics
Formulation of Hypothesis (One-tailed & Two-tailed), Type I and Type II errors, power of a test, Significance of a test, P-value testing, Hypothesis Testing (students T-test, Z-test, Chi-square test). Analysis of variance (ANOVA)

Module IV
Applications of statistical methods using statistical software

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Text & References:

Text:
- Biostatistics: A foundation for analysis in the Health Sciences, W.W Daniel. Publisher: John Wiley and Sons.

References:
- Introduction to Biostatistics, Ronald N. Forthfer and Eun Sun Lee. Publisher: Elsevier.
- Biostatistics: A foundation for analysis in the Health Sciences, W.W Daniel. Publisher: John Wiley and Sons.
- Statistical Methodology, S.P Gupta. Publisher: S.Chand & Co.
- Statistical Analysis, Kaushal, T.L. Publisher: Kalyani Publishers.
- Statistical Methods, Potri, D. Kalyani Publishers.
- Mathematical Statistics by H.C. Saxena and V.K. Kapoor. Publisher: S. Chand & Co
Course Code: MSB 420
Credit Units: 02

Course Contents:

Module I
Basics of sequence analysis retrieving a sequence – nucleic acid / protein

Module II
Local and global alignment – concepts pair wise sequence alignment, multiple sequence alignment, dynamic programming – Smith Watermann algorithm, Needleman Wunsch Algorithm

Module III
Motif and pattern searching, structure prediction, protein structure classification resources, structure superposition tools, energy minimization and simulated annealing

Module IV
Phylogenetic prediction and analysis

Module V
Docking small molecules/ peptides in active site of protein. Use of automated docking procedures. Free energy calculation.

Examination Scheme:

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COMMUNICATION SKILLS - IV

Course Code: MSB 441          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 Speaking Skills
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: Basic Telephony Skills
Guidelines for Making a Call
Guidelines for Answering a Call
Telephone Word Groups
Answering Systems and Voice-Mail

Module IV: Work Place Speaking
Team Briefing
Conflict Management
Negotiations
Participation in Meetings
Keynote Speeches

Examination Scheme:

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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 imparting an understanding of:
Build and leverage your professional reputation
Maintain focus in pressure situations
Make a balanced choice between professional and personal commitments

Course Contents:

Module I: Individual, Society and Nation
Individual Differences and Dimensions of Personality
Socialization Process
Relating to the Nation: Values, Culture, Religion
Sense of pride and Patriotism
Managing Diversity

Module II: 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.
Developing professional power: Goal-setting, time management, handling criticism, interruptions and time wasters

Module III: Career Planning
Knowing one’s Interest and Aptitude
Identifying available Resources
Setting goals to maintain focus:
Developing Positive attributes in personality
Self-reliance and Employability skills

Module IV: Stress Management for Healthy Living
Meaning and Nature of Stress
Stages of stress
Causes and Consequences of stress: Personal, Organizational and Environmental
Personal Styles and strategies of coping

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

Text & References:

FRENCH - IV

Course Code: MSB 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 d’événements/préciser leur date et leur durée.
3. 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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<tr>
<th>Components</th>
<th>CT1</th>
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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.
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.

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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
SPANISH - IV

Course Code: MSB 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: MSB 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.

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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”, “yiwi” (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
GUIDELINES FOR PROJECT FILE

Research experience is as close to a professional problem-solving activity as anything in the curriculum. It provides exposure to research methodology and an opportunity to work closely with a faculty guide. It usually requires the use of advanced concepts, a variety of experimental techniques, and state-of-the-art instrumentation. Research is genuine exploration of the unknown that leads to new knowledge which often warrants publication. 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.

Sufficient time should be allowed for satisfactory completion of reports, taking into account that 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 or Cover Page**
  The title page should contain the following information: Project Title; Student’s Name; Course; Year; Supervisor’s Name.

- **Acknowledgements** (optional)
  Acknowledgment to any advisory or financial assistance received in the course of work may be given.

- **Abstract**
  A good "Abstract" should be straight to the point; not too descriptive but fully informative. First paragraph should state what was accomplished with regard to the objectives. The abstract does not have to be an entire summary of the project, but rather a concise summary of the scope and results of the project.

- **Table of Contents**
  Titles and subtitles are to correspond exactly with those in the text.

- **Introduction**
  Here a brief introduction to the problem that is central to the project and an outline of the structure of the rest of the report should be provided. The introduction should aim to catch the imagination of the reader, so excessive details should be avoided.

- **Materials and Methods**
  This section should aim at experimental designs, materials used. Methodology should be mentioned in details including modifications if any.

- **Results and Discussion**
  Present results, discuss and compare these with those from other workers, etc. In writing these section, emphasis should be given on what has been performed and achieved in the course of the work, rather than discuss in detail what is readily available in text books. Avoid abrupt changes in contents from section to section and maintain a lucid flow throughout the thesis. An opening and closing paragraph in every chapter could be included to aid in smooth flow.

  Note that in writing the various sections, all figures and tables should as far as possible be next to the associated text, in the same orientation as the main text, numbered, and given appropriate titles or captions. All major equations should also be numbered and unless it is really necessary never write in “point” form.
Conclusion
A conclusion should be the final section in which the outcome of the work is mentioned briefly.

Future prospects

Appendices
The Appendix contains material which is of interest to the reader but not an integral part of the thesis and any problem that have arisen that may be useful to document for future reference.

References/ Bibliography
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

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.
Technical merit attempts to assess the quality and depth of the intellectual efforts put into the project.
Project execution is concerned with assessing how much work has been put in.
The File should fulfill the following assessment objectives:

Range of Research Methods used to obtain information

Execution of Research

Data Analysis
Analyse Quantitative/ Qualitative information
Control Quality

Draw Conclusions

Examination Scheme:

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<td>Project Report</td>
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