Microbiology

Practical Syllabus for Academic Year 2020-21 Only

Guidelines for conducting Online Practical courses and Examination for the academic year 2020-21

Microbiology

Following are additional instructions to conduct practical courses and examination through online mode applied to UG/PG Microbiology **only for the academic year 2020-21**

- The following guidelines are created to **maintain the uniformity** of teaching and examination at various affiliated centers of SPPU.
- All the concerned programs under BOS Microbiology are instructed to conduct online practicals in **batches** and from the reduced **list of practicals** published by SPPU.
- The examination will be conducted online through the ZOOM/Google meeting platform or any other having **recording facility**.
- The Students should be informed well in advance regarding the **examination schedule** and their **batches** along with a **joining link** of the online platform.
- The format of the examination includes **oral or viva voce** and online **MCQ examination** framed by concerned faculty members of the department.
- For evaluation of **external** practical examination (**35 Marks) the distribution of marks-20 marks for viva-voce** (shared by two examiners), and **15 marks online MCQ test** (Only for practicals conducted online).
- The same proportion should be applicable for the evaluation of practical courses under 2013 pattern i.e. for 80 mark.
- The viva-voce session should be conducted by turning on the video facility of the student.
- The examination records like **notices, online MCQ files, and video recordings of viva-voce** should be maintained in a **computer hard drive** as proof of examination conducted.
- The **separate guidelines are issued** regarding the dissertation or project work that should be followed strictly along with the abovementioned relevant instructions for the presentation of dissertation work.

Savitribai Phule Pune University

Microbiology Practical Syllabus for AY 2020-21 Only

F. Y. B. Sc. Microbiology Practical Course CBCS Pattern (Implemented from 2019)

F. Y. B. Sc. Microbiology
Semester I
Title: Practical Course Based on theory paper I and II
Total work load= 14 Practicals (Credits: 1.5)
60% of practical= 9 Practicals

Experiment No. in syllabus	Name of Practical	No. of Practicals
1	i. Safety measures and Good Laboratory Practices in microbiology laboratory. ii. Introduction, operation, precautions and use of common microbiology laboratory instruments: Incubator, Hot air oven, Autoclave, Colorimeter, Laminar air flow hood, Clinical centrifuge.	2
2	i. Construction (mechanical and optical), working and care of bright field microscope.	1
3	i. Introduction and use of common laboratory glass wares: Test tubes, culture tubes, suspension tubes, screw capped tubes, Petri plates, pipettes (Mohr and serological) micropipettes, Pasteur pipettes, Erlenmeyer flask, volumetric flask, glass spreader, Durham's tube, Cragie's tube and inoculating needles (wire loop, stab needles)	1
4	Basic staining techniques: i. Monochrome staining ii. Negative staining iii. Gram staining of bacteria	3
5	Observation of motility in bacteria using: Hanging drop method and swarming growth method.	2
Total		**09**

F. Y. B. Sc. Microbiology Practical Course CBCS Pattern (Implemented from 2019)

F. Y. B. Sc. Microbiology

Semester II

Title: Based on theory paper I and II

Total work load= 14 Practicals (Credits: 1.5)

60% of practical= 9 Practicals

Experiment No. in syllabus	**Name of Practical**	**No. of Practicals**
1	i. Preparation of simple laboratory nutrient media (Nutrient agar/broth, MacConkey's agar). ii. Checking sterilization efficiency of autoclave using a biological indicator (*B. stearothermophilus*)	1 1
2	Special staining techniques: i. Endospore staining	1
3	Isolation of bacteria by streak plate technique (Colony and cultural characteristics)	1
4	Enumeration of bacteria from fermented food / soil / water by: i. Spread plate method ii. Pour plate method	2
6	i. To study the effect of different parameters on growth of *E. coli*: pH, temperature, sodium chloride concentration ii. Study of oligodynamic action of heavy metal	3
Total		**09**

Microbiology Practical Syllabus for AY 2020-21 only

S. Y. B. Sc. Microbiology Practical Course CBCS Pattern (Implemented from 2020)

S. Y. B. Sc. Microbiology

Semester I

Title: Practical Course based on theory paper I (MB211) and II (MB212)

Total work load= 11 Practicals **(Credits: 2)**

60% of Practical = 7 Practicals

Experiment No. in syllabus	Name of Practical	No. of Practicals
2	Blood grouping	1
3	I. Biochemical characterization of bacteria: a. Sugar utilization test (minimal medium + sugar) b. Sugarfermentation test c. IMViC d. Enzyme detection – Gelatinase, Catalase, Oxidase e. Oxidative-fermentative test	4
4	Primary screening of industrially important organisms: a. Organic acid producing microorganisms b. Antibiotic producing microorganisms (crowded plate technique)	2
Total		**07**

S. Y. B. Sc. Microbiology Practical Course CBCS Pattern (Implemented from 2020)

S. Y. B. Sc. Microbiology

Semester II

Title: Practical Course based on theory paper I (MB221) and II (MB222)

Total work load= 11 Practicals (Credits:2)

60% of Practical = 7 Practicals

Experiment No. in syllabus	Name of Practical	No. of Practicals
2	**Air Flora:** a. Diversity determination. b. Simpson index and settling velocity determination	1
3	**I. Bacteriological tests for potability of water** a. MPN, Confirmed and Completed test. b. Membrane filter technique (Demonstration)	4
5	a. Induction of mutations by using physical mutagen (e.g. UV rays) and chemical mutagen (e.g. HNO2) b. Isolation of mutants by any suitable method c. Demonstration of UV survival curve	2
Total		**07**

Microbiology Practical Syllabus for AY 2020-21 only

T. Y. B. Sc. Microbiology Practical Course (2013 Pattern)

Course: MB – 347: Practical Course – 1

Title: Applied Microbiology

Total work load= 24 Practicals

60% practical= 15 Practicals

Experiment No. in syllabus	Name of Practical	No. of Practicals
I	Screening and isolation of Pesticide degrading microorganisms from soil.	2
II	Isolation and identification of Lactic cultures up to genus level	2
III	Laboratory scale fermentation, estimation, product recovery and yield calculation of Ethanol / Organic acid (any one)	2
IV	Quality assurance tests: A. Antibiotic and Growth Factor Assay (Agar gel diffusion technique) B. Sterility testing of non-biocidal injectables	2 1
V	MIC and MBC of Antibacterial compounds	2
VI	Tests for Milk and Dairy products i. Phosphatase test ii. MBRT test iii. Test for mastitis iv. Milk fat estimation v. Standard Plate Count (for either milk or any milk product such as milk powder) vi. Direct Microscopic count	3
X	Antifungal activityof Lactic acid bacteria.	1
Total		**15**

T. Y. B. Sc. Microbiology Practical Course (2013 Pattern)

Course: MB – 348: Practical Course – 2
Title: Biochemistry And Genetics
Total work load= 24 Practicals
60% practical= 15 Practicals

Experiment No. in syllabus	Name of the Practical	No. of Practicals
I	Determination of absorption spectra and molar extinction co-efficient (Colorimetry/ Spectrophotometry)	1
II	Clinical Biochemistry:Estimation of blood sugar, blood urea	2
III	Qualitative analytical tests for proteins and carbohydrates	2
IV	Preparation of buffers	1
V	Paper chromatography	1
VI	Quantitative biochemical techniques a. Estimation of total carbohydrates by Phenol-sulfuric acid method b. Estimation of reducing sugar by DNSA method c. Estimation of proteins by Folin Lowry method	2
VII	Enzyme production a Screening of amylase producing organisms b. Production of amylase using these isolates c. Precipitation of amylase from fermentation broth d. Determination of specific activity of crude and purified amylase	4
VIII	Isolation and enumeration of bacteriophage, Study of phage morphology	1
IX	Genomic (bacterial) DNA isolation and detection	1
Total		**15**

T. Y. B. Sc. Microbiology Practical Course (2013 Pattern)

Course: MB – 349: Practical Course – 3

Title: Diagnostic Microbiology And Immunology

Total work load= 24 Practicals

60% practical= 15 Practicals

Experiment No. in syllabus	Name of the Practical	No. of Practicals
I	Clinical microbiology a. Physical, Chemical and Microscopic examination of Clinical samples – urine, stool, pus b. Any two Gram positive and any two Gram Negative organisms from the following Isolation, identification of following pathogens from clinical samples: *E. coli*, *Salmonella* spp., *Pseudomonas spp.*, *Proteus* spp., *Klebsiella* spp., *Shigella*spp., *Staphylococcus spp, Streptococcus* spp. (For identification use of keys as well as Bergey's Manual is recommended) c. Antibiotic sensitivity testing of the isolates (for Gram negative and Gram Positive) d. Study of growth characters of isolated pathogens on following media: Mannitoal salt agar, Wilson Blair agar, Salmonella Shigella agar, Glucose azide medium, Cetrimide agar, TSI agar	3 4 1 1
IV	Hemogram: i. Estimation of hemoglobin (Acid hematin and Cyan-methemoglobin method) ii. ESR and PCV determination, iii. White blood cell differential count from peripheral blood iv. Counting of RBCs and WBCs using counting chamber v. Calculation of hematological indices	3
V	Blood grouping (ABO and Rh systems) and cross-matching	1
VI	Agglutination tests (Widal test, RPR test)	1
VII	Immunoprecipitation (Ouchterlony technique)	1
Total		**15**

Microbiology Practical Syllabus for AY 2020-21 only
M.Sc. I Microbiology Practical Course CBCS Pattern (Implemented from 2019)
MICROBIOLOGY
M.Sc. I - Microbiology
Semester I
Course Type: Choice based Optional Practical Paper (Elective)
Course: MBPE11- Practicals Based on Fungal Systematics and Extremophiles
Total work load= 4 Practicals
60% of practical= 3 Practicals

Total: 2 Credits **Workload: 30 hrs/Credit**

Experiment No. in syllabus	Name of Practical
1	Isolation and identification of a- Yeasts b- Saprophytic molds from natural samples.
2	Isolation and identification of the following extremophiles from natural samples: Acidophiles

M.Sc. I - Microbiology
Semester I
Course Type: Choice based Optional Practical Paper (Elective)
Course: MBPE12- Practicals Based on Experimental Design and Quantitative approached for Biologist
Total work load= 7 Practicals
60% of practical= 4 Practicals

Total: 2 Credits **Workload: 30 hrs/Credit**

Experiment No. in Syllabus	Name of Practical
Practicals based on theory credit Designing of experiments	
1	Designing of Mock Research Proposal which includes: a) Title b) Hypothesis c) Review of Literature d) Methodology (Specify Statistical Methods) e) Possible outcomes (Statistical Interpretations) f) References
Practicals based on theory credit Mathematical approach for Biologists	
1	Numerical Microbiology Problem solving: Unit conversion, Numerical Problems on size, volume, number (CFU and PFU), dilutions, Neubauer chamber, direct microscopic count, Numerical Problems on Bacterial Growth. Numerical problems on diversity indices
2	Computer applications: Using data sheets, and sorting data with different parameters, plotting graphs – bar charts, line graphs, pie charts, adding error bars. (Using Statistical Packages other than Microsoft Excel)
3	Statistical analysis of data – Students t test, ANOVA, Chi square test, F test using computer software(Using Statistical Packages other than Microsoft Excel)

M.Sc. I - Microbiology
Semester I
Course Type: Choice based Optional Practical Paper (Elective)
Course: MBPE13: Practicals Based on Microbial communication, Membrane transport and signal transduction

Total work load= 6 Practicals
60% of practical= 4 Practicals

Total: 2 Credits **Workload: 30 hrs/Credit**

Experiment No. in Syllabus	Name of Practical
Communication and Coordination among microorganisms	
1	Crystal violet assay for estimation of biofilm formation
3	Determination of chemo-taxis responses shown by bacteria using agar plate or capillary tube method
Membrane transport and signal transduction	
4	Study principles of osmosis and diffusion using artificial membranes (dialysis membrane) (explain how various physical and chemical factors affect the diffusion)
5	Different methods of cell disruption

M.Sc. I - Microbiology
Semester I
Course Type: Core Compulsory Practical Paper
Course: MBCP1- Biochemical Techniques

Total work load= 11Practicals
60% of practical= 7 Practicals

Total: 4 Credits **Workload: 30 hrs/Credit**

Experiment No. in Syllabus	Name of Practical
2	Buffer: Determination of pKa of a monoprotic weak organic acid; Preparation of buffers using $KH_2PO_4$and K_2HPO_4, acetic acid andsodium acetate, K_2HPO_4 and H_3PO_4.
3	Computer applications: Using data sheets, and sorting data with different parameters, plotting graphs – bar charts, line graphs, pie charts, adding error bars (Using Microsoft Excel). Statistical analysis of data – Students t test, ANOVA, Chi square test, F test using computer softwares (Using Microsoft Excel)
5	Studying the stages mitosis in growing tip of onion root cells and to observe polyploidy induced by colchicine treatment on root tip.
7	Extraction of Protein and Exo-polysaccharide from bacterial culture(may use TCA and ethanol method)
8	Colorimetry and spectrophotometry: estimation of above sample: Bradford and UV Spectrophotometry (purity using A_{280} method).
9	Chromatography: Separation of hydrolysed protein and EPS sample (above) using paper and thin layer chromatography. (Explain concept of two-dimensional chromatography and descending chromatography).
10	Electrophoresis: SDS-PAGE of above proteins / To determine the ion-exchange capacity and nature of given resin using anion exchange chromatography.

M.Sc. I - Microbiology

Semester II

Course Type: Choice based Optional Practical Paper (Elective)

Course: MBPE21- Practicals based on Bioinformatics and Bio-nanotechnology

Total work load= 8Practicals

60% of practical= 5 Practicals

Total: 2 Credits **Workload: 30 hrs/Credit**

Experiment No. in Syllabus	Name of Practical
Bioinformatics	
1	Isolation, purity checking using A_{260}/A_{280} ratio and Agarose gel electrophoresis of isolated chromosomal DNA of bacteria
4	Sequence matching by BLAST analysis
5	Drawing phylogenetic tree using related sequences (Using standard software like Phylip, Mega etc)
Bionanotechnology	
1	Biological synthesis of nanoparticles (at least 2 types) using actinomycetes /fungi /yeast and their characterization by UV-Vis spectroscopy Characterisation of nanoparticles, Antimicrobial activity, dye decolorization activity, etc
2	Biological synthesis of nanoparticles (at least 2 types) using plant material/plant extract Extract preparation Synthesis of nanoparticles UV/vis spectroscopy and their characterization by UV-Vis spectroscopy, Characterization of nanoparticles, Antimicrobial activity, dye decolorization activity, etc

MSc. I - Microbiology

Semester II

Course Type: Choice based Optional Practical Paper (Elective)

Course: MBPE22: Practical Based on Molecular Biology tools and applications

Total work load= 7Practicals

60% of practical= 4 Practicals

Total: 2 Credits **Workload: 30 hrs/Credit**

Experiment No. in Syllabus	Name of Practical
1	Cloning and transformation using plasmid vectors- GFP gene cloning /blue and white screening Vector and Insert Ligation, Preparation of competent cells Transformation of E. coli with standard plasmids, Calculation of transformation efficiency
2	PCR amplification and purification of 16S rRNA gene
4	Protoplast fusion
5	Activity staining analysis (Zymograms) (NATIVE PAGE)

M.Sc. I - Microbiology

Semester II

Course Type: Choice based Optional Practical Paper (Elective)

Course: MBPE23: Practicals based on Nitrogen Metabolism, respiration and Photosynthesis

Total work load= 9Practicals

60% of practical= 5 Practicals

Total: 2 Credits **Workload: 30 hrs/Credit**

Experiment No. in Syllabus	Name of Practical
1	Isolation of IAA producing organism, Detection of Indole acetic acid production by microorganism
2	Detection of siderophore production by microorganism
5	Enrichment and isolation of lignin/xylan degraders from Soil
8	Enrichment, Isolation and characterization of Cyanobacteria
9	Detection of chlorophyll-a activity of Cyanobacteria

M.Sc. I - Microbiology

Semester II

Course Type: Core Compulsory Practical Paper

Course: MBCP2- Molecular Biology, Enzymology and Instrumentation Techniques

Total work load= 13Practicals

60% of practical= 8 Practicals

Total: 4 Credits **Workload: 30 hrs/Credit**

Experiment No. in Syllabus	Name of Practical
1	Concept of lac-operon: Lactose induction of Beta galactosidase; Glucose Repression; Diauxic growth curve of *E. coli*.
2	Plasmid DNA isolation, DNA quantitation and characterization by gel electrophoresis
3	Construction of restriction digestion map of plasmid DNA
4	Curing of bacterial plasmid
5	Gene annotation
8	Determination of molecular extinction coefficient of biomolecule
9	Isolation of Aflatoxin producing organism. Extraction and Detection of Aflatoxin in food
10	Isolation and characterization of lipase/cellulase/chitinaseproducing microbe

Microbiology Practical Syllabus for AY 2020-21 only

M.Sc. II Microbiology Practical Course CBCS Pattern (Implemented from 2020)

MICROBIOLOGY

M.Sc. II - Microbiology
Semester III
Course Type: Choice based Optional Practical Paper (Elective)
Course: MBPE31- Cell Culture Techniques
Total work load= 4Practicals
60% of practical= 3Practicals

Total: 2Credits **Workload: 30 hrs/Credit**

Experiment No. in Syllabus	Title
1	A. Density gradient based separation of peripheral lymphocytes B. Preparation of Lymphocyte culture
2	A. Chick embryo fibroblast cell culture

M.Sc. II - Microbiology
Semester III
Course Type: CBOP-3 Choice based Optional Practical Paper (Elective)
Exclusively based on Molecular Biology II CCTP8
Course: MBPE 32 Bioremediation and Biomass Utilization
Total work load= 5Practicals
60% of practical= 3Practicals

Total: 2 Credits **Workload: 30 hrs/Credit**

Experiment No. in Syllabus	Name of Practical
Bioremediation	
1	Degradation of para nitro phenol using *Pseudomonas putida*
3	Demonstration of DNA finger-printing technique
Biomass utilization	
1	Biodiesel production using micro-algae

M.Sc. II - Microbiology
Semester III
Course Type: Choice based Optional Practical Paper (Elective)
Course: MB PE 33 Practicals based on Clinical Microbiology and Microbial Virus Technology

Total work load= 13Practicals
60% of practical= 8Practicals

Total: 2 Credits **Workload:30 hrs /credit**

Experiment No. in Syllabus	Title
1A	Collection, Handling, transportation of clinical samples
1B	Study of drug resistance pattern for clinical isolates
1D	Microbial assay using combination of antibiotics against resistant species of any bacterial isolate
2A	Isolation and purification of lytic bacteriophages from various environmental samples
2B	Isolation and enumeration of actinophages from soil
2C	Isolation of phyco viruses
2E	One step growth Curve
2H	Negative staining (Sample preparation) for electron microscopic studies (Demonstration)

M.Sc. II - Microbiology
Semester III
Course Type: Core Compulsory Practical Paper
Course: MBCP3 - Immunology, Molecular Biology and Clinical Microbiology

Total work load= 17 Practicals
60% of practical= 12 Practicals

Total: 4 Credits **Workload:30 hrs /credit**

Experiment No. in Syllabus	Name of Practical
1. Practicals based on CCTP 7 Immunology	
1	Precipitation reactions of Antigen-antibody: Single radial diffusion
2	Rocket Immuno-electrophoresis
3	Agglutination techniques: Determination of iso antibodies titre to human blood group antigen.
4	Demonstration of Western Blotting
2. Practicals based on CCTP 8 Molecular Biology II	
1	Isolation of plasmid from bacteria
2	Study of the process of transformation for the strain improvement
3	Blue white screening/bacterium *E. coli* using a gene for green fluorescent protein
4	Study of the process of bacterial conjugation and transfer of the gene of interest.
3. Practicals based on CCTP 9 Clinical Microbiology	
A 1	Isolation and identification of *Helicobacter pylori*.
B 1	Isolation and identification of *Candida albicans*
B 3	Isolation and identification of *Aspergillus flavus*
C	Viral titration by haemagglutination technique(Determination of titre)

M.Sc. II - Microbiology
Semester IV
Course Type: Choice based Optional Practical Paper (Elective)
Course: MBPE 41 Practicals based on Pharmaceutical Microbiology
Total work load= 5 Practicals
60% of practical= 3 Practicals
Total: 2 Credits **Workload: 30 hrs /credit**

Experiment No. in Syllabus	Name of Practical
Sterility testing of following pharmaceutical preparations as per IP	
i	Oral preparations preparation: Antipyretic or antibiotic tablets
Detection and isolation of anti infectives from plant	
i	Extraction of bioactive principles from plant.
ii	Estimation of its antimicrobial activity using standard guidelines (CLSI)

M.Sc. II - Microbiology
Semester IV
Course Type: Choice based Optional Practical Paper (Elective)
Course: MBPE 42 Advances in Microbial Technology
Total work load= 5 Practicals
60% of practical= 3 Practicals
Total: 2 Credits **Workload: 30 hrs /credit**

Experiment No. in Syllabus	Name of Practical
Bioconversion (Bioconversions using immobilized systems (cells / enzyme) Parameter testing	
1 a	Effect of gel concentration
Animal Cell Culture Technology	
2 a	Preparation of Hybridoma from tumour cell lines
2 b	Production of monoclonal antibodies from hybridoma of tumour cell lines

M.Sc. II - Microbiology
Semester IV
Course Type: Choice based Optional Practical Paper (Elective)
Course: MBPE 43 Practicals based on Industrial Waste Water Treatment and Industrial Production of Vaccines

Total work load= 4 Practicals
60% of practical= 3 Practicals

Total: 2 Credits **Workload:30 hrs /credit**

Experiment No. in Syllabus	Title
Practicals based on industrial waste water treatment	
i	Estimation of pollution load of a natural sample (e.g. river water / industrial waste water)
Practicals based on industrial production of vaccines	
i	Checking the potency of a toxoid based vaccine by immune diffusion assay
ii	Preparation of *Salmonella* O and H antigen and estimation with known antibodies

M.Sc. II - Microbiology
Semester IV
Course: Choice based Optional Practical Paper (Elective)
Course: MBPE 44-Practicals based on Bioethics, Biosafety, Quality Control and Quality Assurance

Total work load= 10 Practicals
60% of practical= 6Practicals

Total: 2 Credits **Workload:30 hrs /credit**

Experiment No. in Syllabus	Name of Practical
NABL norms for Calibration of	
i	Autoclave- Calibration of pressure gauge and temperature by thermal mapping, sterility testing, SOP preparation.
ii	Laminar Air Flow- checking the functioning of UV light by colony count method and sterility checking by blood agar media plate method, SOP preparation.
Food Safety and Standards Authority of India (FSSAI) Regulations Test Methods for Drinking Water	
i	Detection of sulphite-reducing anaerobes (*Clostridia*)
Food Safety and Standards Authority of India (FSSAI) Regulations Test Methods for Water/butter/cheese/milk product for Processed Food Industry	
i	Proteolytic Plate Count
ii	Lipolytic Plate Count
Food Safety and Standards Authority of India (FSSAI) Regulations for Microbiological Testing of food	
i	Detection and Confirmation *of Listeria monocytogenes* in Foods

M.Sc. II - Microbiology
Semester IV
Course Type: Core Compulsory Practical Paper
Guidelines for MBCP-4: Dissertation
Total: 4 Credits

General guidelines for the Dissertation

- The project work should be **performed individually**.
- The guide will provide students a **Title** with **3-4 Keywords** that the student will identify.
- The students will write an 'Introduction' elaborating the important points with respect to identified keywords citing relevant references **(approximately 7 pages).**
- Students will write a section on '**Methodology'** that may be used to achieve the possible expected outcomes understood from the Title **(approximately 8 pages)** giving as many possible methods/protocols with elaborate details and relevant references.
- The guide will provide **Figures and Tables** (Total Tables and figures not exceeding 8) that are appropriately blinded and Figure legends modified to evade identity of original paper. The students will interpret results observed in the Figures in their own words and discuss the result with existing literature **(approximately 10 pages including figures).**
- Pre-final submission will be made (The source of the figures and tables will be shared later).
- After a pre-final submission, the final submission will be submitted with source of the data elaborated below the Figures and Tables to avoid plagiarism.
- The document should include at least 30 references **(approximately 5-7 pages).** These references should be in the text and in the list of references.
- The references in the list should be formatted in the following manner.

  1. Journal article

  Author with initials (Year of publication) Title of paper. Full name of Journal (no abbreviations) volume number and page number or (do in case of online journals).

  E.g.

  Jeschke M.G., van Baar M.E., Choudhry M.A., Chung K.K., Gibran N.S., Logsetty S. (2020) Burn Injury. Nature Reviews Disease Primers 6:1–25.

  2. Book Chapters

  Author with initials (Year of publication) Title of book chapter. Full name of Book, Page numbers. Publisher.

  E.g.

  Romanowski K. (2016) Burn Pathophysiology. *In* Burn Care for General Surgeons and General Practitioners, 15–36. Springer
- **General guidelines for Project related document to be prepared in MS word.**

  Font type: Times New Roman
  Font size: 12 for general text (bold for headings)
  Line spacing: 1.5
  Margins: Normal

- ## Evaluation

  For evaluation follow the point wise marking scheme given in the syllabus.

  Internal: Checking of submitted report/document by the guide- 30 marks
  External: Viva with two examiners 70 marks (Internal-35 marks, External-35 marks)