

DEPARTMENT OF ZOOLOGY  
ABHEDANANDA MAHAVIDYALAYA, SAINTHIA  
ACADEMIC PLAN (SUGGESTIVE)

|                        |   |
|------------------------|---|
| Semester:              | <b>II</b>   |
| Courses:               | <b>CORE COURSE- IV (CC-4)- CELL BIOLOGY</b>   |
| TotalMarks:            | 75  |
| Total credit:          | 06 (Theory-4+ Practical-2)  |
| Total no. of lectures: | 90 (T-60+P-30)  |
| Objective:             | To have a tentative course of action well in advance through the said Academic Plan to be able to: <ul style="list-style-type: none"><li>• execute the new CBCS with ease</li><li>• finish syllabus and conduct evaluations on time to the satisfaction of both the student and the teacher</li></ul> |
| Evaluation method:     | C1- 10% of the total marks (class test/assignment/seminar + attendance)<br>C2- 10% of total marks (class test/assignment/seminar + attendance)<br>C3- 60 marks [T-(10x2) + (5x2) + (2x5) + P-20]- semester-end examination  |
| C1:                    | 8 <sup>th</sup> week from the beginning of the semester<br>Completion of 1/3 <sup>rd</sup> of the total course syllabus<br>Around 1 <sup>st</sup> week of March 2018  |
| C2:                    | 16 <sup>th</sup> week from the beginning of semester<br>Completion of 2/3 <sup>rd</sup> of the syllabus<br>Around 1 <sup>st</sup> week of May 2018  |
| C3:                    | 21 <sup>st</sup> -23 <sup>rd</sup> week<br>Full Syllabus<br>Around Last Week of June, 2018  |

|  |  |
|--|--|
| <p><b>Syllabus CC4</b></p>   | <p><b><u>THEORY:</u></b><br/> Unit 1: Overview of Cell<br/> Unit 2: Plasma membrane<br/> Unit 3: Cytoplasmic organelles 1<br/> Unit 4: Cytoplasmic organelles 2<br/> Unit 5: Cytoskeleton<br/> Unit 6: Nucleus<br/> Unit 7: Cell division<br/> Unit 8: cell signaling</p> <p><b><u>PRACTICAL</u></b><br/> 1. Preparation of temporary stained squash of onion root tip to study various stages of mitosis<br/> 2. Squash preparation of grasshopper testis and study of the various stages of meiosis.<br/> 3. Preparation of permanent slide to show the presence of Barr body in human female blood cells/cheek cells.<br/> 4. Study of cell viability by Trypan Blue staining from onion root tip/ blood cell.</p>  |
| <p>Texts prescribed by university for uniformity in translation and ease of access</p> | <ul style="list-style-type: none"> <li>● Verma and Agarwal. Cell Biology, Genetics, Molecular Biology, Evolution and Ecology. S. Chand Pub, Weinberg R.A. (2014). Biology of Cancer. 2nd edition. Garland Science, Taylor and Fran</li> <li>● Cooper, G.M. and Hausman, R.E. (2009). The Cell: A Molecular Approach. 5th Edition. ASM Press and Sunderland, Washington, D.C.; Sinauer Associates, MA</li> <li>● Karp, G. (2008). Cell and Molecular biology: Concepts and Application. 5th Edn, John Wiley</li> <li>● Pal, A. (2011). Textbook of Cell and Molecular Biology 3rd Edn, Bokks and Allied, Kolkata</li> <li>● Chatterjee and Chatterjee practical Zoology.</li> <li>● Ghosh K.C and Manna, B. (2015): Practical Zoology, New Central Book Agency, Kolkata.</li> </ul> |

|   |  |
|---|--|
|   |  |
| <b>ACADEMIC PLAN</b>  |  |
| Semester Begins   | First week of January 2018   |
| Number of lectures/week (1hr/lecture)   | Theory=08+Practical=04   |
| Tentative no. of classes/topic taken and syllabus covered before C1<br><br><b>1/3<sup>rd</sup> of CC-3 should have been covered</b> | <p><b><u>Theory</u></b></p> <p>Unit1:<br/>Basic structure of Prokaryotic and Eukaryotic cells, Viruses, Viroid, Prion and Mycoplasma(3L)</p> <p>Unit 2:<br/> <ol style="list-style-type: none"> <li>1. Ultra structure and composition of Plasma membrane: Fluid mosaic model</li> <li>2. Transport across membrane: Active and Passive transport, Facilitated transport</li> <li>3. Cell junctions: Tight junctions, Gap junctions, Desmosomes(8L)</li> </ol> </p> <p>Unit 3:<br/> <ol style="list-style-type: none"> <li>1. Structure and Functions: Endoplasmic Reticulum, Golgi Apparatus, Lysosomes</li> <li>2. Protein sorting and mechanisms of vesicular transport(6L)</li> </ol> </p> <p>Unit 4:<br/> <ol style="list-style-type: none"> <li>1. Mitochondria: Structure, Semi-autonomous nature, Endosymbiotic hypothesis Mitochondrial Respiratory Chain, Chemi- osmotic hypothesis.</li> <li>2. Structure and Functions of Peroxisome and Centrosome (9L)</li> </ol> <ul style="list-style-type: none"> <li>• <b><u>Practical- point1 &amp;3</u></b></li> </ul> <p>. Preparation of temporary stained squash of onion root tip to study various stages of mitosis(6L)</p> <p>3. Preparation of permanent slide to show the presence of Barr body in human female blood cells/cheek cells(3L)</p> </p> |
| Last week of February 2018  | Deciding of method of evaluation for C1Topic/area-unit 2&3 ,Notifying students about   |

|  |  |
|--|--|
|  | the topic and the method of assessment.  |
| 2 <sup>nd</sup> week of March 2018   | <ul style="list-style-type: none"> <li>• Submitting question papers for class test/ topic for seminar/ assignment</li> </ul>   |
| 3 <sup>rd</sup> week of March 2018   | <ul style="list-style-type: none"> <li>• Conducting C1 (8<sup>th</sup> week of sem.)</li> <li>• Class test/seminar/assignment</li> <li>• Calculating class attendance</li> </ul>   |
| 4 <sup>th</sup> week of March 2018   | <ul style="list-style-type: none"> <li>• Department meeting</li> <li>• Keeping record marks for C1</li> </ul>  |
| Syllabus covered after CI  | <p><b><u>Theory:</u></b><br/>Unit-6</p> <ol style="list-style-type: none"> <li>1. Structure of Nucleus: Nuclear envelope, nuclear pore complex, Nucleolus.</li> <li>2. Chromatin: Euchromatin and Heterochromatin and packaging (nucleosome) (10L)</li> </ol> <ul style="list-style-type: none"> <li>• <b><u>Practical</u></b><br/>point-4</li> <li>4. Study of cell viability by Trypan Blue staining from onion root tip/ blood cell (3L)</li> </ul>   |
|  |  |
| Tentative no. of classes/topic taken and syllabus covered before C2<br><br><b>2/3<sup>rd</sup> of CC3 should have been covered</b> | <p><b><u>Theory</u></b><br/>Unit-5</p> <ol style="list-style-type: none"> <li>1. Type, structure and functions of cytoskeleton</li> <li>2. Accessory proteins of microfilament &amp; microtubule</li> <li>3. A brief idea about molecular motors( 10L)</li> </ol> <ul style="list-style-type: none"> <li>• Unit-7</li> <li>1. Cell cycle and its regulation,</li> <li>2. Cancer (Concept of oncogenes and tumor suppressor genes with special referencetop53, Retinoblastoma and Ras and APC.</li> <li>3. Mitosis and Meiosis: Basic process and their significance(8L)</li> </ul> <ul style="list-style-type: none"> <li>• Unit-8</li> <li>1. Cell signalling transduction pathways; Types of signalling molecules and receptors</li> <li>2. GPCR and Role of second messenger (cAMP)</li> <li>3. Extracellular matrix</li> <li>4. Cell interactions Apoptosis and Necrosis( 2L)</li> </ul> |

|                                  |   |
|----------------------------------|---|
|                                  | <p><b><u>Practical</u></b></p> <p><b><u>Point2:</u></b><br/>Squash preparation of grasshopper testis and study of the various stages of meiosis.(6L)</p>  |
| 1 <sup>st</sup> week of May 2018 | <ul style="list-style-type: none"> <li>• Deciding of method of evaluation for C2</li> <li>• Topic/area- Unit6&amp;5</li> <li>• Notifying students about the topic and the method of assessment</li> </ul> |
| 2 <sup>nd</sup> week of May 2018 | <ul style="list-style-type: none"> <li>• Submitting question papers for class test/ topic for seminar/ assignment</li> </ul>  |
| 3 <sup>rd</sup> week of May 2018 | <ul style="list-style-type: none"> <li>• Conducting C2 (16<sup>th</sup> week of sem.)</li> <li>• Class test/seminar/assignment</li> <li>• Calculating class attendance</li> </ul>                         |
| 4 <sup>th</sup> week of May 2018 | <ul style="list-style-type: none"> <li>• Department meeting</li> <li>• Keeping record marks for C2</li> </ul>   |
| 3rd week of June 2018            | <p><b>Syllabus for CC3(theory +practical) should have been completed</b> including providing necessary guidelines, pointers, study materials leaving them enough time to prepare for C3</p>               |
| Last week of June2018            | <p>Clearing last moment doubts of students regarding any portion of CC3 for C3</p>  |