Second Semester								
1	B21PC2011	Language : Kannada	CC	3	30	70	100	4
2	B21PC2012	Language : Hindi	CC					
3	B21PC2013	Language : Additional English	CC					
4	B21PC2020	Communicative English	CC	3	30	70	100	4
5	B21PC2030	Physics-II	HC	3	30	70	100	4
6	B21PC2040	Chemistry-II	HC	3	30	70	100	4
7	B21PC2050	Mathematics-II	HC	3	30	70	100	4
8	B21PC2060	Constitution of India and Professional Ethics	FC	2	15	35	50	2
		Practicals						
9	B21PC2080	Physics Lab-II	HC	2	15	35	50	3
10	B21PC2090	Chemistry Practical-II	HC	2	15	35	50	3
11	B21PC2X10	Mathematics - II Lab	HC	2	15	35	50	3
Total Credits				**23**			**700**	**31**

B. Sc – Physics, Chemistry, Mathematics (PCM)
Detailed Syllabus
(effective from Academic Year 2021)

FIRST SEMESTER

Course Code	Course Title	Course Type	L	T	P	C	Hrs/Week
B21PC1011	**Kannada-1**	CC	2	1	0	3	4

Course Objectives:

ನಾಲ್ಕು ಸೆಮಿಸ್ಟರ್‌ಗಳಲ್ಲಿ ಸಮಗ್ರ ಕನ್ನಡ ಸಾಹಿತ್ಯವನ್ನು ಪರಿಚಯಿಸುವ ಉದ್ದೇಶವನ್ನು ಹೊಂದಿದೆ. ಅದರಂತೆ ಮೊದಲನೆಯ ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಜನಪದ, ಪ್ರಾಚೀನ, ಮಧ್ಯಕಾಲೀನ ಕಾವ್ಯಗಳು, ಹೊಸಗನ್ನಡದ ಸಣ್ಣಕಥೆಗಳು ಹಾಗು ನಾಟಕ ಸಾಹಿತ್ಯವನ್ನು ಪಠ್ಯವನ್ನಾಗಿ ಆಯ್ಕೆ ಮಾಡಿಕೊಂಡು, ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಾಹಿತ್ಯದ ಬಗ್ಗೆ ಸದಭಿರುಚಿಯನ್ನು ಮೂಡಿಸಲಾಗುತ್ತದೆ. ಸಾಂಸ್ಕೃತಿಕ ತಿಳುವಳಿಕೆಯ ಜೊತೆಗೆ ವ್ಯಕ್ತಿತ್ವ ವಿಕಸನದ ಕಡೆಗೆ ಗಮನ ನೀಡಲಾಗುತ್ತದೆ.

- ಭಾಷೆ, ಸಾಹಿತ್ಯ, ಇತಿಹಾಸ ಮತ್ತು ಸಂಸ್ಕೃತಿಗಳನ್ನು ಕನ್ನಡ, ಕರ್ನಾಟಕಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ ಪರಿಚಯಿಸಲಾಗುತ್ತದೆ.
- ವಿದ್ಯಾರ್ಥಿಗಳ ಸರ್ವತೋಮುಖ ಬೆಳವಣಿಗೆಗೆ ಅನುವಾಗುವಂತೆ ಹಾಗೂ ಅವರಲ್ಲಿ ಮಾನವ ಸಂಬಂಧಗಳ ಬಗ್ಗೆ ಗೌರವ, ಸಮಾನತೆ ಮೂಡಿಸಿ, ಬೆಳೆಸುವ ನಿಟ್ಟಿನಲ್ಲಿ ಪಠ್ಯಗಳ ಆಯ್ಕೆಯಾಗಿದೆ.
- ಅವರಲ್ಲಿ ಸೃಜನಶೀಲತೆ, ಶುದ್ಧ ಭಾಷೆ, ಉತ್ತಮ ವಿಮರ್ಶಾ ಗುಣ, ನಿರರ್ಗಳ ಸಂಭಾಷಣೆ, ಭಾಷಣ ಕಲೆ ಹಾಗೂ ಬರಹ ಕೌಶಲ್ಯಗಳನ್ನು ಬೆಳೆಸುವುದು ಗುರಿಯಾಗಿದೆ
- ಸ್ಪರ್ಧಾತ್ಮಕ ಪರೀಕ್ಷೆಗಳಿಗೆ ಅನುಕೂಲವಾಗುವಂತಹ ವಿಷಯಗಳನ್ನು ಗಮನದಲ್ಲಿಟ್ಟುಕೊಂಡು ಸೂಕ್ತ ಪಠ್ಯಗಳನ್ನು ಆಯ್ಕೆ ಮಾಡಿಕೊಳ್ಳಲಾಗಿದೆ.

Course Outcomes:

ಜನಪದ, ಮಧ್ಯಕಾಲೀನ ಕಾವ್ಯಗಳು, ಹೊಸಗನ್ನಡದ ಸಣ್ಣಕಥೆಗಳು ಹಾಗು ಆತ್ಮಚರಿತ್ರೆ ಮೂಲಕ ಕಾಲದ ಸ್ಥಿತ್ಯಂತರಗಳನ್ನು ಅದರ ಒಳನೋಟಗಳನ್ನು ಬೆಳೆಸುತ್ತದೆ.

- ಸಾಮಾಜಿಕ, ರಾಜಕೀಯ, ಧಾರ್ಮಿಕ, ಸಾಂಸ್ಕೃತಿಕ ಹಾಗೂ ಲಿಂಗಸಂಬಂಧಿ ವಿಚಾರಗಳೆಡೆ ಗಮನಹರಿಸುವುದರೊಂದಿಗೆ ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಚರ್ಚಾ ಮನೋಭಾವವು ಬೆಳೆಯುತ್ತದೆ.
- ಜೀವನದಲ್ಲಿ ಬರುವ ಅಭಿಪ್ರಾಯ ಬೇಧಗಳು, ಸಮಸ್ಯೆಗಳನ್ನು ಆಧುನಿಕ ಸಂದರ್ಭದಲ್ಲಿ ಮಾನವೀಯತೆಯೊಂದಿಗೆ ನಿರ್ವಹಿಸುವಂತೆ ಪ್ರೇರೇಪಿಸುತ್ತದೆ.
- ಉತ್ತಮ ಸಂವಹನ ಕಲೆಯನ್ನು ಬೆಳೆಸುವ ಉದ್ದೇಶವನ್ನು ಈಡೇರಿಸುತ್ತದೆ.

Unit-I: **12 Hrs**

1. ಭೈರುವನ ರಥಕ್ಕೊಗೆನ ಬನ್ನಿರೋ–ಜನಪದ ಗೀತೆ
2. ಕೆರೆಗೆ ಹಾರ –ಜನಪದ ಗೀತೆ
3. ಯಾವ ಕಾಲದ ಶಾಸ್ತ್ರವೇನು ಹೇಳಿದರೇನು – ಕುವೆಂಪು.
4. ಗಂಗಾವತರಣ – ಅಂಬಿಕಾತನಯದತ್ತ.

Unit-II: **12 Hrs**

1. ಆಚಾರವೇ ಸ್ವರ್ಗ, ಅನಾಚಾರವೇ ನರಕ –ಬಸವಣ್ಣನ ವಚನಗಳು
2. ಬೇವಿನ ಹಣ್ಣು ಮೆಲ್ಲನೆ ಚುಂಬಿಸಿದರೆ ಇನಿದಹುದೆ – ಅಲ್ಲಮಪ್ರಭುವಿನ ವಚನಗಳು

3. .ಕೇಡಿಲ್ಲದ ರೂಹಿಲ್ಲದ ಚೆಲುವಂಗಾನೊಲಿದೆನವ್ವಾ– ಅಕ್ಕಮಹಾದೇವಿ ವಚನಗಳು

Unit-III: **12 Hrs**

- ತಿರುಚಿ ಸೊಪ್ಪಿನ ಚಿಕಿತ್ಸೆ–ಪೂರ್ಣಚಂದ್ರ ತೇಜಸ್ವಿ
- ಧನಿಯರ ಸತ್ಯನಾರಾಯಣ–ಕೊರಡ್ಕಲ್ ಶ್ರೀನಿವಾಸರಾವ್
- ಜ್ಯೋತಿಷಿಯ ಒಂದು ದಿನ–(ಆರ್ ಕೆ ನಾರಾಯಣ್) ಅನುವಾದ ಡಾ. ಎಚ್ ರಾಮಚಂದ್ರಸ್ವಾಮಿ.

Unit-IV: **12 Hrs**

ಡಾ. ಎ.ಪಿ.ಜೆ ಅಬ್ದುಲ್ ಕಲಾಂರವರ ಆತ್ಮಚರಿತ್ರೆ

ಅ)ನನ್ನ ಪಯಣ– ಅನುವಾದ–ಜಿ.ಕೆ. ಮಧ್ಯಸ್ಥ

- ಎಂಟರ ವಯಸ್ಸಿನ ಕೆಲಸದ ಹುಡುಗ
- ನಾನು ಸೋತಾಗ
- ಬೆಂಕಿ ಒಡನೆ ಮುಖಮುಖಿ

ಇ) ಟರ್ನಿಂಗ್ ಪಾಯಿಂಟ್ಸ್– ಅನುವಾದ–ಜಿ.ಕೆ. ಮಧ್ಯಸ್ಥ.

- ತೋಟದಲ್ಲಿ

ಪರಾಮರ್ಶನ ಗ್ರಂಥಗಳು:

1. ಕೆ.ಆರ್ ಕೃಷ್ಣಸ್ವಾಮಿ(ಸಂಪಾದಕರು), ಆದಿಚುಂಚನಗಿರಿ– ಜನಪದ ಗೀತೆಗಳ ಸಂಗ್ರಹ,ಶ್ರೀ ಆದಿಚುಂಚನಗಿರಿ ಮಹಾಸಂಸ್ಥಾನ ಮಠ, ನಾಗಮಂಗಲ ತಾಲೂಕು ಮಂಡ್ಯ ಜಿಲ್ಲೆ, 1961.
2. ಬಿ ಎಂ ಶ್ರೀಕಂಠಯ್ಯ (ಸಂಪಾದಕರು), ಕೆರೆಗೆ ಹಾರ, ಕನ್ನಡ ಬಾವುಟ, ಕನ್ನಡ ಸಾಹಿತ್ಯ ಪರಿಷತ್, ಬೆಂಗಳೂರು 2004.
3. ಕುವೆಂಪು,ಕೋಗಿಲೆ ಮತ್ತು ಸೋವಿಯತ್ ರಷ್ಯಾ, ಉದಯರವಿ ಪ್ರಕಾಶನ, ಮೈಸೂರು,1944.
4. ಅಂಬಿಕಾತನಯದತ್ತ, ಗಂಗಾವತರಣ, 1944
5. ಪ್ರೊ. ಕೆ ಮರುಳಸಿದ್ದಪ್ಪ ಹಾಗೂ ಪ್ರೊ. ನಾಗರಾಜ(ಸಂಪಾದಕರು),ವಚನ ಕಮ್ಮಟ, ಪ್ರಸಾರಾಂಗ ಬೆಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ ಬೆಂಗಳೂರು, 1979
6. ಡಾ.ಎಲ್. ಬಸವರಾಜು(ಸಂಪಾದಕರು) ಬಸವಣ್ಣನವರ ವಚನಗಳು, ಗೀತಾ ಬುಕ್ ಹೌಸ್, ಮೈಸೂರು, 1952.
7. ಡಾ.ಎಲ್. ಬಸವರಾಜು(ಸಂಪಾದಕರು) , ಮೈಸೂರು, ಅಲ್ಲಮನ ವಚನ ಚಂದ್ರಿಕೆ– ಪ್ರಭುದೇವರ ವಚನಗಳು, ನಳಿನಿ ಶಂಕರ ಪ್ರಕಾಶನ, ಮೈಸೂರು
8. ಕೆಪಿ ಪೂರ್ಣಚಂದ್ರ ತೇಜಸ್ವಿ ಅವರ ಅಣ್ಣನ ನೆನಪು ಕೃತಿಯಿಂದ ಆಯ್ದುಕೊಳ್ಳಲಾಗಿದೆ., ಪುಸ್ತಕ ಪ್ರಕಾಶನ, ಮೈಸೂರು, 1996.
9. ಕೊರಡ್ಕಲ್ ಶ್ರೀನಿವಾಸರಾವ್, ನಂದಾದೀಪ, 1938.
10. ಇಂಗ್ಲಿಷ್ ಮೂಲ: ಆರ್ ಕೆ ನಾರಾಯಣ್,(ಅನುವಾದ: ಡಾ.ಎಚ್ ರಾಮಚಂದ್ರಸ್ವಾಮಿ), ಮಾಲ್ಗುಡಿಯ ದಿನಗಳು, ಪ್ರಕಾಶಕರು ಪ್ರಿಸಂ ಬುಕ್ ಪ್ರೈವೇಟ್ ಲಿಮಿಟೆಡ್, ಬೆಂಗಳೂರು, 2009.
11. ಎ.ಪಿ.ಜೆ ಅಬ್ದುಲ್ ಕಲಾಂ,(ಅನುವಾದ: ಜಿ.ಕೆ. ಮಧ್ಯಸ್ಥ),ನನ್ನ ಪಯಣ,ವಸಂತ ಪ್ರಕಾಶನ,ಬೆಂಗಳೂರು,2013.
12. ಎ.ಪಿ.ಜೆ ಅಬ್ದುಲ್ ಕಲಾಂ,(ಅನುವಾದ: ಜಿ.ಕೆ. ಮಧ್ಯಸ್ಥ),ಟರ್ನಿಂಗ್ ಪಾಯಿಂಟ್,ವಸಂತ ಪ್ರಕಾಶನ, ,ಬೆಂಗಳೂರು,2012.

Course Code	Course Title	Course Type	L	T	P	C	Hrs/Week
B21PC1012	**Hindi-1**	CC	2	1	0	3	4

पाठ्यक्रम रूपरेखा :

यह पाठ्यक्रम नौसिखिया, अपनी भाषा की क्षमता का विकास करने हेतु तथा विभिन्न साहित्यिक प्रक्रियाओं द्वारा समाज, संस्कृति एवं जीवन के मूल्यों को समझने हेतु अभिकल्पित है |

पाठ्यक्रम उद्देश्य :

- संदर्भानुसार उचित भाषा का प्रयोग करने की दक्षता को छात्रों में उत्पन्न करना |
- साहित्य के माध्यम से समाज एवं मानवीय मूल्यों को समझाकर, उन मूल्यों की रक्षा हेतु प्रेरित करना |
- छात्रों में पुस्तक पठन एवं लेखन की अकृतिम प्रवृत्ति स्थापित करना |
- अध्येताओं में साहित्य के माध्यम से प्रभावी एवं कुशल संचार का विकास करना |

अधिगम परिणाम :

अध्ययन की समाप्ति पर अध्येयता –

- सामाजिक मूल्य एवं नैतिक जवाबदेही को स्वीकार कर सकता है |
- साहित्य की प्रासंगिकता को जीवन में समझने की दक्षता रखता है |
- समाज में अंतर्निहित पद्दतियाँ एवं विचारधाराओं का व्याख्यान करने में सक्षम बन सकता है |

अध्ययन विषय सूची / पाठ्यक्रम

इकाई – 1: कहानी, संस्मरण — **अध्यापन अवधियाँ :** 12 hrs.

1.कहानी – नशा – प्रेमचंद

2.कहानी – सुखमय जीवन – चंद्रधर शर्मा गुलेरी

इकाई – 2: कहानी, आत्मकथा — **अध्यापन अवधियाँ :** 12 hrs.

3.कहानी – मरने से पहले – भीष्म साहनी

4.कहानी – लाल हवेली – शिवानी

इकाई – 3: कहानी, व्यंग्य रचना — **अध्यापन अवधियाँ :** 12 hrs.

5.कहानी – चाय का एक प्याला – कैथरीन मैन्सफील्ड

6.व्यंग्य रचना – भेड़े और भेडियें – हरिशंकर परसाई

इकाई – 4: अनुवाद, संक्षेपण — **अध्यापन अवधियाँ :** 12 hrs.

अनुवाद : अंग्रेज़ी – हिन्दी (शब्द एवं अनुच्छेद)

संक्षेपण : परिच्छेद का एक तिहाई भाग में |

सन्दर्भ ग्रन्थ :

- पाठ्य पुस्तक – रेवा विश्वविद्यालय
- सुबोध व्यवहारिक हिन्दी – डॉ. कुलदीप गुप्त
- अभिनव व्यवहारिक हिन्दी – डॉ.परमानन्द गुप्त
- हिन्दी साहित्य का इतिहास - डॉ. नागेन्द्र
- आधुनिक हिन्दी साहित्य का इतिहास - डॉ. बच्चन सिंह
- हिन्दी साहित्य का नवीन इतिहास - डॉ. लाल साहब सिंह
- शुद्ध हिन्दी कैसे बोले कैसे लिखे- पृथ्वीनाथ पाण्डे
- कार्यालय अनुवाद निदेशिका
- संक्षेपण और पल्लवन - के.सी.भाटिया&तुमन सिंग

सूचना : पाठ ३. प्रणाम और ६. निराला : एक आकर्षित व्यक्तित्व के स्थान पर ३. शरत के साथ बिताया हुआ कुछ समय और ६. जेल जीवन की झलक पाठ को चयन करके, पाठ्यक्रम में संशोधन किया गया है |

Course Code	Course Title	Course Type	L	T	P	C	Hrs/Week
B21PC1013	**ENGLISH - I**	CC	2	1	0	3	4

Course Objectives:

1. To equip students with the ability to acquire the functional use of language in context.
2. To motivate the students to explore and critique issues related to society and Ethics.
3. To develop in the students a genuine habit of reading and writing leading to effective and efficientcommunication.

Course Outcomes:

On completion of the course, learners will be able to:

1. Demonstrate ethical responsibilities in taking cognizance of issues relating to society and values.
2. Develop an understanding of literature in context.
3. Interpret and paraphrase their ideas logically and cohesively.
4. Illustrate the systems and ideologies inherent in the society.

Course Contents:

Unit-I: Values and Ethics **12 Hrs**

Literature:

Rabindranath Tagore - Where the Mind is Without Fear, William Wordsworth – Three Years She Grew in Sun and Shower,Saki – The Lumber-room,William Shakespeare – Extract from *Julius*

Caesar (Mark Antony's Speech) Language: Vocabulary Building

Unit-II: Natural & Super Natural **12 Hrs**

Literature: John Keats – La Belle Dame Sans MerciCharles Dickens – The Signal Man
Hans Christian Anderson - The Fir TreeWilliam Shakespeare – An Excerpt from *The Tempest*
Language: Collective Nouns

Unit-III: Travel and Adventure **12 Hrs**

Literature:R.L. Stevenson – Travel, Elizabeth Bishop - The Question of Travel, H.G. Wells – The MagicShop,Jonathan Swift – Excerpt from *Gulliver's Travels Book – I*
Writing Skills:Travelogue

Unit-IV: Success Stories **12 Hrs**

Literature: Emily Dickinson – Success is Counted Sweetest Rupert Brooke – Success
Dr. Martin Luther King - I Have a Dream Helen Keller – Excerpt from *The Story of My Life*
Writing Skills: Brochure &Leaflet

Reference Books:

1. Tagore, Rabindranath. *Gitanjal*i. Rupa Publications, 2002.
2. Wordsworth, William. *The Complete Works of William Wordsworth*. Andesite Press, 2017.
3. Munro, Hector Hugh. *The Complete Works of Saki*. Rupa Publications, 2000.
4. Shakespeare, William. *The Complete Works of William Shakespeare*. Sagwan Press, 2015.
5. Chindhade, Shirish. *Five Indian English Poets: Nissim Ezekiel, A.K. Ramanujan, ArunKolatkar,DilipChitre, R. Parthasarathy*. Atlantic Publications, 2011.
6. Dickens, Charles. *The Signalman and Other Horrors: The Best Victorian Ghost Stories of CharlesDickens: Volume 2*. Createspace Independent Publications, 2015.
7. Anderson, Hans Christian. *The Fir Tree*. Dreamland Publications, 2011.
8. Colvin, Sidney (ed). *The Works of R. L. Stevenson. (Edinburgh Edition)*. British Library, HistoricalPrints Edition, 2011.
9. Bishop, Elizabeth. *Poems*. Farrar, Straus and Giroux, 2011.
10. Swift, Jonathan. *Gulliver's Travels*. Penguin, 2003.
11. Dickinson, Emily. *The Complete Poems of Emily Dickinson*. Createspace Independent Publications,2016.
12. Brooke, Rupert. *The Complete Poems of Rupert Brooke*. Andesite Press, 2017.
13. King, Martin Luther Jr. &James M. Washington. *I Have a Dream: Writings And Speeches ThatChanged The World.* Harper Collins, 1992.
14. Keller, Helen. *The Story of My Life*. Fingerprint Publishing, 2016.
15. Green, David. *Contemporary English Grammar Structures and Composition*. New Delhi:MacMillan Publishers, 2010.
16. Thorpe, Edgar and Showick Thorpe. *Basic Vocabulary*. Pearson Education India, 2012.

Course Code	Course Title	Course Type	L	T	P	C	Hrs/Week
B21PC1020	**FUNCTIONAL ENGLISH**	CC	2	1	0	3	4

Course Objectives:

- Facilitate the learners in acquiring listening and speaking competencies
- Assist the learners in independent language comprehension and production
- make the students aware of the different communicative functions of English
- Develop the language skills in English.

Course Outcomes:

On completion of the course, students will be able to:

1. Interpret audio files and comprehend different spoken discourses/ excerpts in different accents(Listening Skills).
2. Demonstrate speaking ability with clarity, confidence and comprehension and communicate withone or many listeners using appropriate communicative strategies (Speaking Skills).
3. Make use of reading different genres of texts adopting various reading strategies (Reading Skills).
4. Develop the ability to write cohesively, coherently and flawlessly avoiding grammatical errors, usinga wide vocabulary range, organizing their ideas logically on a topic (Writing Skills).

Course Contents:

Unit-01: Introduction to English Language and Basic Grammar

1.1 Importance of Learning English, English an International Language
1.2 Parts of speech
1.3 The sentence, Clause, Phrase, Kinds of sentences
1.4 Articles
1.5 Use of auxiliaries and Modals

Unit-02: Contextual Use of Modern Grammar

2.1 Tenses: Present, Past and Future tenses
2.2 Verb Forms and uses
2.3 Concord: Subject – verb
2.4 Transformations of sentences: Active and Passive Voice; Direct and Indirect Speech
2.5 Common Errors

Unit-03: Listening and Speaking Skills

3.1 Listening and speaking skills: Components and Importance

3.2 Introduction to English sounds and Speech Mechanism
3.2.1 Phonetic transcription using IPA symbols
3.2.2 Vowel sounds,
3.2.3 Consonantal sounds,
3.2.4 Stress and Intonation
3.3 Listening Skill & Speaking Skill (Practice of 3.2.1 to 3.2.6)

Unit-04: Reading, Writing Skills and Vocabulary

4.1 Reading skill: Importance, Reading for comprehension,
4.2 Types- Oral and Silent
4.3 Components of rapid reading skill - Skimming, Scanning, Intensive and Extensive.
4.4 Practice in reading, Reading for pleasure, Reference skills
4.5 Importance of Writing Skill, Different ways of developing written expression- and - essential features of paragraph writing and its practice; Essay writing and Dialogue writing.
4.6 Vocabulary: Homophones, Synonyms and Antonyms, Appropriate vocabulary in formal, semi-formal and informal contexts

Reference Books:

1. Green, David. *Contemporary English Grammar Structures and Composition*. New Delhi:MacMillan Publishers, 2010.
2. Thorpe, Edgar and Showick Thorpe. *Basic Vocabulary*. Pearson Education India, 2012.
3. Leech, Geoffrey and Jan Svartvik. *A Communicative Grammar of English*. Longman, 2003.
4. Murphy, Raymond. *Murphy's English Grammar with CD*. Cambridge University Press, 2004.
5. Rizvi, M. Ashraf. *Effective Technical Communication*. New Delhi: Tata McGraw-Hill, 2005.
6. Riordan, Daniel. Technical Communication. New Delhi: Cengage Publications, 2011.
7. Sen et al. Communication and Language Skills. Cambridge University Press, 2015.
8. Sanjay Kumar, PushpLata, Communication Skills, Oxford University Press, 2013.
9. C.S.G.Krishnamacharyulu and R.Lalitha, Business Communication by Himalaya Publishing House, 2013.
10. M.Quintanilla, Shawn T. Wahl, Business and Professional Communication: Keys for
11. Workplace Excellence by Kelly , Sage Publications India, 2011.
12. Wren & Martin revised by N. D. V. Prasad Rao, English Grammar and Composition, S.Chand Company Ltd., Ram Nagar, New Delhi-110055
13. James &ThomosPeechaatt, Essential English Grammar and Composition, Holly Faith International (P) Ltd.
14. Suchdev, M S, Methodology of Teaching Englisgh

Course Code	Course Title	Course Type	L	T	P	C	Hrs/Week
B21PC1030	**Physics-I**	**HC**	**2**	**1**	**0**	**3**	**4**

Course Objectives:

The Objectives of this course are to make students to learn:

- The basics concepts of the behavior of physical bodies it provides the relation of motion of all theobjects around us in our daily life.
- To make the students to have a firm grasp of the theories that forms the basis of mechanics andunderstands the role of gravity in our life.
- It gives the details of the physical properties of the materials.

Course Outcomes:

On the successful completion of this course students shall be able to:

- Understand the vector representations, motion of the objects and apply them to ascertain the stateof the systems.
- Learned conservation laws of linear and angular momentum and apply them to solve problems
- Acquire the knowledge of basics of the Kepler's laws, gravitation, potentials and fields.
- Gain the knowledge about the properties of materials like elasticity, elastic constants and theirrelation, torsion of the wire and cylinder and bending of the beam.
- Understand the concepts of the motion of the fluids and gain the knowledge of the differentphysical properties, such as, surface tension and viscocity.
- Demonstrate quantitative problem solving skills in all the topics covered. (Application)

Course Content:

UNIT-I: 12 Hrs

Vector Analysis: Vectors: types and representation, dot product and cross product, scalar and vector triple product, Vector Calculus: Differentiation of vector, Del operator, scalar and vector fields, gradiant, divergence and curl. Gauss, Stoke and Green's theorem.

Mechanics of a particle: Newton's laws of motion and conservation principles, Principles of conservation of linear momentum, energy and angular momentum, Rotational motion: angular velocity, angular acceleration, angular momentum, torque, Motion of charged particle in crossed electrical and magnetic field(without derivation).

UNIT-II: 12 Hrs

Dynamics of rigid bodies: Moment of inertia (MI), Physical significance of MI, theroems of parallel and perpendicular axis, formulation of moment of inertia, Pendulums: Compound, Kater's pentdulums and applications

Gravitation: Law of gravitation, Gravitational field and potential, Gravitational potential energy, escape velocity and gravitational potential due to thin uniform spherical shell and solid sphere of uniform density. Conservative forces and inverse square law, Kepler's laws.

UNIT-III **12 Hrs**

Elasticity: Hooke's law, Elastic moduli, Elastic constants, Relation between elastic constants,
Torsion: Torsion of cylinder and bending of beam, cantilever, shape of girder.

UNIT-IV **12 Hrs**

Surface Tension: Definition and dimensions of surface tension, Application to spherical and cylindrical drops and bubbles, Variation of surface tension with temperature, Jaegear's method.

Viscosity: Co-efficient of viscosity and its dimensions, Rate of flow of liquid in a capillary tube, Poiseuille'sformula, Variation of viscosity of a liquid with temperature, Applications of viscosity.

NOTE: In order to enhance the understanding of the subject, numbers of problems are to be worked out in each section,

Reference Books:

1. Narayanamoorthy, *Mechanics – Part I and part II*, National Publishing Company
2. Upadhyaya. JC. *Mechanics,* 11th edition, Ramprasad publications, Agra, 2017
3. Halliday, D, Resnick, R and Walker J. *Principles of Physics*, 9th Edition, John Wiley & Sons, Inc.(2013)
4. Charles Kittel and Walter Knight, *Berkeley Physics Course: Mechanics*, Vol. 1, 2nd edition, TataMcGrow Hill (2011)
5. D.C. Mathur, *Mechanics*, 5th edition 2016
6. Brijlal & Subramanyam. *Properties of Matter*, 6th Edition, S Chand and Co., New Delhi (2002)
7. Shankara Narayana S R, *Mechanics and Properties of Matter*, 2nd Revised Edition, Sultan Chandand Sons (1998).
8. Arora C L, *Refresher Course in B.Sc. Physics* Vol. 1, Revised Edition, S Chand and Company (2008).
9. Arora C L, and Hemne P S, *Physics for Degree Students*, Revised Edition, S Chand and Company(2012).
10. Mathur D S, *Elements of Properties of Matter*, S Chand and Company (2007).
11. Murugeshan, S. *Properties of Matter,* S.Chand and Co, New Delhi (2001).
12. Smith, C.J., *General Properties of Matter,* Orient Longman Publishers (1960).

Course Code	Course Title	Course Type	L	T	P	C	Hrs/Week
B21PC1040	**Chemistry-I**	**HC**	**2**	**1**	**0**	**3**	**4**

Course Objectives:

- Provide brief descriptions of the accomplishments of Planck, Einstein, Rutherford, Rydberg, Bohr,de Broglie and Schrodinger; and how these contributed to understanding the atom
- Calculate the energy and wavelength of a given electronic transition in hydrogen
- Organize a set of element or monoatomic ions in order of increasing atomic radius, ionic radius,first ionization energy and electronegativity
- Define electronegativity, electron affinity and ionization potential
- Identify and name the organic functional groups in a molecule
- Name un substituted and substituted alkanes, alkenes and alkynes given a drawing of a moleculeand vice versa
- Focuses on Phase formation and introduction to Surface Chemistry

Course Outcomes:

After successful completion of this courses students shall be able to:

- Understanding the atomic structure, basics of quantum chemistry and its applications.
- Explaining theories of chemical bonding and molecular structure.
- Gathering basic knowledge of organic chemistry.
- Illustrate the preparative methods of saturated and unsaturated hydrocarbons.
- Acquire the fundamental knowledge of periodicity.
- Understand the concepts of physical chemistry.

Course Content:

UNIT-I **12hrs**

Atomic Structure: Fundamental particles of atoms, atomic orbitals Planck Quantization - Black body radiation, various atomic models, Bohr's theory and its limitations, dual behavior of matter and radiation, De Broglie's hypothesis equation, Heisenberg Uncertainty principle. Hydrogen atomic spectra, Aufbau and Pauli exclusion principles. Hund's multiplicity rule electronic configurations of the elements.

UNIT-II **12hrs**

Periodic Table and Periodicity Modern periodic law: Division of elements into s, p, d & f blocks based ontheir outer shell configuration. Periodic properties-periodicity & causes of periodicity.

i. Atomic radius – definitions of covalent, metallic & vanderwall's radius; calculation of atomic radius frominter nuclear distance

ii. Ionic radius –definition; calculation of iso electronic ions by paulings method.

iii. Ionization energy and electron affinity,-definations; principles of methods of determination.

iv. Electronegetivity evaluation by Paulings and Mullikan's methods.

Trends of the above properties across a period and down a group. Application of the above in predicting oxidizing / reducing property across a period. Comparative study of groups 1,2, 16 and 17 with respect to electronic configuration, atomic and ionic radii, ionization energy, electronegetivity and compound (halides, oxides and carbonates of groups 1 and 2 ; detailed comparative study of diagonal relationship between Li and Mg, cause for diagonal relationship ; hydrides of group 16 and 17) Applications of electronegetivity.

UNIT-III **12hrs**

Introduction to Organic Chemistry: Nomenclature of organic compounds, IUPAC recommendations for naming simple aliphatic, alicyclic and aromatic compounds. Inductive, resonance, mesomeric, conjugation, electromeric and hyperconjugative effects. Reactive intermediates: Homolytic and heterolytic cleavages - carbocations, carbanions, free radicals, carbenes - stability, generation and fate. Aromaticity – Huckel"s rule – benzene and heterocyclic compounds

UNIT IV **12hrs**

PHASE EQUILIBRIA: Terminology – phase, components, degree of freedom. Gibb"s phase rule, derivation of phase rule. One component system – water, sulphur and carbon dioxide, two component system

- simple eutectic system, thermal analysis of cooling curves, lead-silver system, bismuth-cadmium. Freezingmixture: acetone-dry ice. Two component system with compound formation.

SURFACE CHEMISTRY: Types of adsorption, characteristics of physisorption and chemisorption, adsorption isotherms and its types, Freundlich and derivation and treatment of Langmuir isotherms – Unimolecular and bimolecular reactions applications of adsorption.

Reference Books:

Inorganic Chemistry:

1. Lee, J.D. Concise Inorganic Chemistry ELBS, 1991.
2. Cotton, F.A., Wilkinson, G. & Gaus, P.L. Basic Inorganic Chemistry, 3rd ed., Wiley.

3. Douglas, B.E., McDaniel, D.H. & Alexander, J.J. Concepts and Models in Inorganic Chemistry, John Wiley & Sons.
4. Huheey, J.E., Keiter, E.A., Keiter, R.L. & Medhi, O.K. Inorganic Chemistry: Principles ofStructure and Reactivity, Pearson Education India, 2006.

Organic Chemistry:

1. Graham Solomon, T.W., Fryhle, C.B. & Dnyder, S.A. Organic Chemistry, JohnWiley & Sons (2014).
2. McMurry, J.E. Fundamentals of Organic Chemistry, 7th Ed. Cengage Learning IndiaEdition, 2013.
3. Sykes, P. A Guidebook to Mechanism in Organic Chemistry, Orient Longman, NewDelhi (1988).
4. Eliel, E.L. Stereochemistry of Carbon Compounds, Tata McGraw Hill education, 2000.
5. Finar, I.L. Organic Chemistry (Vol. I & II), E.L.B.S.
6. Morrison, R.T. & Boyd, R.N. Organic Chemistry, Pearson, 2010.
7. Bahl, A. & Bahl, B.S. Advanced Organic Chemistry, S. Chand, 2010.
8. Francis Carey, Organic Chemistry; 3rd Edition, Tata McGraw Hill India.
9. Paula Yurkanis Bruice, Organic Chemistry; 3rd Edition, Pearson Education Asia.
10. Jerry March, Advanced Organic Chemistry; 4rd Edition, John Wiley.

Physical Chemistry:

1. Bahl, A. & Bahl, B.S. Advanced Physical Chemistry, S. Chand, 2010.
2. J. N. Gurtu and Aayushi Gurtu, Undergraduate Physical Chemistry, Vol I, Vol II and Vol IIIPragati Prakashan.
3. Barrow, G.M. Physical Chemistry Tata McGraw-Hill (2007).
4. Castellan, G.W. Physical Chemistry 4th Ed. Narosa (2004).
5. Kotz, J.C., Treichel, P.M. & Townsend, J.R. General Chemistry Cengage Learning India Pvt.Ltd., New Delhi (2009).
6. Mahan, B.H. University Chemistry 3rd Ed. Narosa (1998).
7. Petrucci, R.H. General Chemistry 5th Ed. Macmillan Publishing Co.: New York (1985).

Course Code	Course Title	Course Type	L	T	P	C	Hrs/Week
B21PC1050	**Mathematics-I**	**HC**	**2**	**1**	**0**	**3**	**4**

Course Objectives:

1. To understand the concepts of algebra and its applications in various fields.
2. To understand the concepts of solid geometry and its applications in various fields.
3. To understand the concepts of differential calculus and its applications.
4. To familiarize the concepts of integral calculus and its applications.

Course Outcomes:

After successful completion of the courses students shall be able to:

1. Apply the matrix theory to solve the system of linear equations.

2. Apply the concepts of solid geometry and to solve problems of various fields.
3. Apply the knowledge of successive differentiation to solve the problems relative with standardformulae.
4. Apply Leibnitz theorem to find n^{th} differentiation of functions.
5 Apply the knowledge of reduction formulae and differentiation under integral sign by Leibnitz ruleto solve integral equations.
6 Solve problems on matrices, differential equations and definite integral equations by using SCI lab.

Unit-I: Theory of Matrices **12 Hrs**

Elementary row and column transformations (operations) , equivalent matrices, theorems on it. Row- reduced echelon form, Normal form of a matrix, Rank of a matrix, Problems. Homogeneous and Non – Homogeneous systems of m linear equations in n unknown's consistency criterion – criterion for uniqueness of solutions. Solution of the same by elimination method. Eigenvalues and Eigenvectors of a square matrix of order 2 and 3, standard properties, Cayley-Hamilton theorem (with proof). Findingthree unknowns.

A^{-1}, A^{-2} & A^2, A^3, A^4. Solving the Linear Equations With

Unit-II: Differential Calculus – 1 **12 Hrs**

Successive differentiation, n^{th} differentiation of standard functions

e^{ax}, $(ax+b)^n$, $\frac{1}{ax+b}$, $\log(ax+b)$, $\sin(ax+b)$, $\cos(ax+b)$, $e^{ax}\sin(bx+c)$, $e^{ax}\cos(bx+c)$

Leibnitz theorem (with proof) and its application (problems).

Unit-III: Integral Calculus - 1 **12 Hrs**

Reduction formula for

$\int \sin^n x\,dx$, $\int \cos^n x\,dx$, $\int \tan^n x\,dx$, $\int \cot^n x\,dx$, $\int \sec^n x\,dx$, $\int \operatorname{cosec}^n x\,dx$ & $\int \sin^m x \cos^n x\,dx$, withdefinite limits, differentiation under integral sign by Leibnitz rule.

Unit-IV: Differential Equation – 1 **12 Hrs**

Solutions of ordinary differential equations of first order and first degree: Linear differential equations, reducible to linear differential equation, Exact equations, Equation reducible to exact. Equations of first order and higher degree – non linear first order, higher degree – (Mention) solvable for p - solvable for y - solvable for x - Clairaut's equation - singular solution - Geometric meaning. Orthogonal trajectories in Cartesian and polar forms.

Text Books:

1. Shanthi Narayan and P.K.Mittal, Differential Calculus, Reprint. New Delhi: S.Chand & Company Ltd.,2011.
2. Shanthi Narayan, Integral Calculus, Reprint. New Delhi: S. Chand and Company Ltd., 2004.
3. G K Ranganath, Text book of B.Sc. Mathematics, Revised ed. New Delhi, India: S Chand andCompany Ltd., 2011.
4. Krishnamoorty V K and Mainra V P and Arora J L, An Introduction to Linear Algebra, Reprint. NewDelhi, India: Affiliated East West Press Pvt. Ltd., 2003.
5. G K Ranganath, Text book of B.Sc., Mathematics, Revised ed. New Delhi, India: S Chand and Co.,2011.

Reference Books:

1. G B Thomas and R L Finney, Calculus and Analytical geometry, 10th ed.: Addison – Wesley, 2000.
2. S. Narayanan & T. K. Manicavachogam Pillay, Calculus.: S. Viswanathan Pvt. Ltd., 1996, vol. I & II.
3. S.Narayanan and T.K.Manicavachogam Pillay, Calculus (I & II). Chennai, India: S. Viswanathan Pvt.Ltd., 1996.
4. Joseph Edwards, An elementary treatise on the differential calculus: with applications and numerousexample, Reprint. Charleston, USA: BiblioBazaar, 2010.

Course Code	Course Title	Course Type	L	T	P	C	Hrs/Week
B21PC1060	**Environmental Studies**	FC	2	0	0	2	2

Prerequisites:

Basic knowledge of Environmental Science studied at higher secondary & school level.

Course Objectives:

1. Graduates will be familiar with current and emerging environmental trends and global issues, andhave an understanding of ethical and societal responsibilities.
2. Graduates will have the ability to obtain the knowledge, and will recognize the need for engaging in life-long learning..
3. Will find the need of various types of energy(conventional & non-conventional) resources and natural resources.
4. Acquire knowledge with respect to biodiversity, threats, conservation and appreciate the concept of ecosystem.
5. Acquiring knowledge about environmental pollution-sources, effects and control measures of environmental pollution, degradation and waste management.
6. Explore the ways for protecting the environment.

Course Outcomes:

After completion of this course the students will be able to:

1. Analyze the environmental conditions and protect it.
2. Will observe the role of individual, government and NGO in environmental protection.
3. Get motivate to find new renewable energy resources with high efficiency through active research.
4. Analyze the ecological imbalances and protect it.
5. List the causes of environmental pollution & find ways to overcome them.
6. Design pollution controlled products.

Course Content:

Unit-I **6 Hrs**

Multidisciplinary Nature of Environmental Studies: Introduction to Environment, objectives and guiding principles of environmental education, Components of environment, Structure of atmosphere,Sustainable environment/Development, Impact of technology on the environment in terms of modernagricultural practices and industrialization, Environmental Impact Assessment

Environmental protection – Role of Government-Assignments of MOEF, Functions of central and stateboards, Institutions in Environment and People in Environment, Initiative and Role of Non-government organizations in India and world.

Self study: Need for public awareness on the environment, Gaia Hypothesis

Unit-II **6 Hrs**

Environmental pollution, degradation & Waste management:

Environmental Pollution – Definition, sources and types, Pollutant-Definition & classification, Conceptsof air pollution, water pollution, Soil pollution, Automobile pollution-Causes, Effects & control measures.

Self study: Case studies of London smog, Bhopal gas tragedy, marine pollutions and study of differentwaste water treatment processes.

Environmental degradation – Introduction, Global warming and greenhouse effect,Acid rain-formation & effects, Ozone depletion in stratosphere and its effect.

Solid Waste management – Municipal solid waste, Biomedical waste, Industrial solid waste andElectronic waste (E-Waste).

Self study: Disaster management, early warning systems-bio indicators for Tsunami and other naturaldisasters.

Unit-III **6 Hrs**

Energy & Natural resources:

Energy – Definition, classification of energy resources, electromagnetic radiation-features and applications,Conventional/Non-renewable sources – Fossil fuels based(Coal, petroleum & natural gas), nuclear energy, Non-conventional/renewable sources – Solar, wind,hydro, biogas, biomass, geothermal, ocean thermal energy, Hydrogen as an alternative as a future source of energy.

Self study: Remote sensing and its applications, Chernobyl (USSR) nuclear disaster and Fukushima(Japan) nuclear disaster.

Natural resources –water resource (Global water resource distribution, Water conservation methods, Waterquality parameters, Uses of water and its importance), Mineral resources (Types of minerals, Methods of mining & impacts of mining activities), Forest wealth (Importance's, Deforestation-Causes, effects and controlling measures)

Self study: Hydrology & modern methods adopted for mining activities.

Unit-IV **6 Hrs**

Ecology and ecosystem:

Ecology-Definition, branches, objectives and classification, Concept of an ecosystem – Structure and functions, Characteristics of an Ecosystem-Ecosystem Resilience, Ecological succession and productivity,Balanced ecosystem, Components of ecosystem-abiotic and biotic, biological diversity.

Biogeochemical cycles and its environmental significance – Carbon, nitrogen and phosphorus cycle,Energy flow in ecosystem, food chains –types, food web & Ecological Pyramids.

Self study: Need for balanced ecosystem and restoration of degraded ecosystems.

Reference Books:

1. "Environmental Studies", by R.J. Ranjit Daniels and JagadishKrishnaswamy, (2017), Wiley India Private Ltd., New Delhi, Co-authored &Customised by Dr.MS Reddy &Chandrashekar.
2. "Environmental Studies", by R.J. Ranjit Daniels and JagadishKrishnaswamy, (2009), Wiley India Private Ltd., New Delhi.
3. "Environmental Studies" by Benny Joseph, Tata McGraw – Hill Publishing Company Limited.
4. Environmental Studies by Dr.S.M.Prakash, Elite Publishers Mangalore, 2007
5. Rajagopalan R. 2005,"Environmental Studies – from Crisis to cure", Oxford University Press
6. Environmental Science by Arvind walia, Kalyani Publications, 2009.
7. Environmental Studies by AnilkumarDey and Arnab kumarDey.

Course Code	Course Title	Course Type	L	T	P	C	Hrs/Week
B21PC1070	**Physics Lab-I**	**HC**	**0**	**0**	**2**	**2**	**2**

Course Objectives:

The mechanics related experiments included in this course enable the students to understand the theory betterand develop the application skills in a practical situation.

Course objectives are:

1. Enable students to apply knowledge of Physics and engineering in calculating the elasticproperties of materials.
2. Impart knowledge to use the techniques, modern engineering tools necessary for material testing.
3. Facilitate students to use the techniques, skills for testing of fluid properties.
4. Develop ability to communicate effectively the mechanical properties of materials

Course Outcomes:

After successful completion of the courses students shall be able to:

1. Compute the values of moment of inertia, mass and density and elastic properties of agiven material through experiment.
2. Compute the liquid properties like surface tension and viscosity of the given liquidthrough experiment.
3. Calculate acceleration due to gravity through experiment.

Course Content:

Any EIGHT of the following experiments:

1. Bar pendulum: Determination of the acceleration due to gravity (graphical method).
2. Fly wheel: Determination of moment of inertia, mass and density.
3. Drop weight method: Determination of surface tension of water and kerosene.
4. Drop weight method: Determination of interfacial tension between two liquids.
5. Quinke's method: Determination of surface tension and angle of contact of mercury.
6. Determination of Young's modulus by single cantilever method.
7. Searle's double bar: Determination of young's modulus (Y),
8. Searle's double bar: Determination of the rigidity modulus (n), bulk modulus (K) and Poisson's ratio.
9. Torsional pendulum: To determine the moment of inertia of the given regular body and also , to determine the rigidity modulus of the material of the given suspension wire, by settin up a torsionalpendulum.

10. Bulk modulus of rubber.

10. Determination of the Young's modulus by stretching method.

11. Determination of terminal velocity of small ball falling through viscous fluid and its coefficientof viscosity.

12. Viscosity by Poiseuille's method.

13. Poisson ratio by rubber tube.

14. To determine the spring constants in Series and Parallel combination.

15. To determine the Young's modulus of the given body (meter scale) by uniform bending.

Course Code	Course Title	Course Type	L	T	P	C	Hrs/Week
B21PC1080	**Chemistry Practicals-I**	**HC**	**0**	**0**	**2**	**2**	**3**

Course Objectives:

This course is intended to impart basic analytical skills with an emphasis on volumetric analysis. It alsoemphasizes the importance of organized and systematic approach in carrying out experiments.

Course Outcomes:

After successful completion of the courses students shall be able to:

Use volumetric as an analytical tool.

Course Content:

List of Experiments:

1. Calibration of: (i) Pipette (ii) Burette (iii) Volumetric flask
2. Preparation of standard sodium carbonate solution by preparing standard hydrochloric acid
3. Estimation of potassium permanganate by using standard solution of oxalic acid present in thesolution.
4. Determination of the percentage of available chlorine in the given sample of bleaching powder.
5. Estimation of ferrous and ferric iron in a given mixture using standard potassium dichromatesolution
6. Estimation of COD of given wastewater sample.
7. Estimation of total hardness of water.
8. Estimation of ammonium chloride using standard sodium hydroxide and standardhydrochloric acid solutions (back titration).
9. Determination of the density using specific gravity bottle and viscosity of a liquid usingOstwald'sviscometer.

9. Determination of the density using specific gravity bottle and surface tension of a liquidusing stalagmometer.

11. Effect surfactants on the surface Tension of water (Stock solution)

Reference Books for Practicals:

1. Khosla, B. D.; Garg, V. C. & Gulati, A. Senior Practical Physical Chemistry, R. Chand &Co.: New Delhi (2011).
2. S.W. Rajbhoj and T. K. Chondhekar, Systematic Experimental Physical Chemistry ,Anjali Publication ,Second Edition 2000.
3. Sunita Rattan , Experiments in Applied Chemistry, S.K. Kataria & Sons ,Second edition2008.
4. Khosla, B. D.; Garg, V. C. & Gulati, A. Senior Practical Physical Chemistry, R. Chand& Co.: New Delhi (2011).
5. Garland, C. W.; Nibler, J. W. & Shoemaker, D. P. Experiments in Physical Chemistry.

Course Code	Course Title	Course Type	L	T	P	C	Hrs/Week
B21PC1090	**Mathematics Lab-I**	**CC**	**0**	**0**	**2**	**2**	**3**

Course Objectives:

1. Impart knowledge of concepts of algebra and its applications in various fields.
2. Facilitate understanding of the concepts of solid geometry and its applications in various fields.
3. Facilitate understanding of the concepts of differential calculus and its applications.
4. Familiarize with the concepts of integral calculus and its applications.

Course Outcomes:

After the completion of the course the student shall be able to:

1. Apply the matrix theory to solve the system of linear equations.
2. Apply the concepts of solid geometry and to solve problems of various fields.
3. Apply the knowledge of successive differentiation to solve the problems relative with standardformulae.
4. Apply Leibnitz theorem to find n^{th} differentiation of functions.
5. Apply the knowledge of reduction formulae and differentiation under integral sign by Leibnitz ruleto solve integral equations.
6. Solve problems on matrices, differential equations and definite integral equations by using SCI lab.

Course Content:

1) Introduction to Sci lab
2) Introduction to Sci lab commands connected with matrices
3) Computation with matrices

4) Raw reduad whelon from and normal form
5) Establishing consistency or otherwise and solving system of linear equations
6) Introduction to Maxima
7) Introduction to Maxima commands for derivatives and nth derivatives
8) nth derivative without Leibnitz rule
9) nth derivative with Leibnitz rule
10) maxima commands for reduction formula with or without limit
11) Scilab and Maxima commands for plotting functions
12) Solution of differential equations using suilab / Maxima and plotting the solution – I
13) Solution of differential equations using scilab / Maxima and plotting the solution – II.