

# THE ICFAI UNIVERSITY JAIPUR

## Faculty of Science and Technology

### Course Handout

Second Semester: 2011- 2012

Course Code	Course title	L	P	U
AO 101	Probability & Statistics	3	0	3

#### 1. Instructor-in-charge:

Dr. Rajiv Lochan Pareek

Room No. 50

Email: [rlpareek@iujaipur.edu.in](mailto:rlpareek@iujaipur.edu.in)

**2. Scope & Objective of the course:** This course introduces the concept of probability and enables the student to become familiar with probabilistic concepts, a selected study of discrete & continuous distributions. Finally probability theory is related with statistical inference.

#### 3. (a) Textbook(s):

T1	Miller & Freund's Probability & Statistics for Engineers: Johnson Richard A., Eastern Economy Edition, PHI, 8th Edition, 2011.
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#### (b) Reference book(s):

R1	Introduction to Probability Theory & Applications: Feller, W. John Wiley, 3rd Edition, 2000.
R2	Mathematical Statistics: Freund, J.E.: Prentice Hall, 6th Edition, 2002.
R3	Modern Probability Theory & Applications: Parzen E. John Wiley. J.C., Brothers, 5th Edition, 2000.
R4	Introductory Probability and Statistical Applications: Meyer.P.L, Oxford &IBH, 1970.
R5	Applied Statistics and Probability for Engineers: Douglas C. Montgomery, & George C. Runger, John Wiley & Sons, Inc., 3rd Edition, 2004.

#### 4. Lecture-wise plan

Lecture Nos.	Learning Objective	Topics to be covered	Reference (Chap./Sec./ Page Nos. of Text Book)
1	Introduction	Self study	<b>T1: Ch. 1-2</b>
2-3	To understand and able to describe sample spaces and events for random experiments with graphs,lists,tree diagrams, etc.,	Probability Sample space, Events and Counting	<b>Sec. 3.1-3.2</b>

4-5	To be able to use probabilities of outcomes to calculate probabilities of events Calculate the probabilities of joint events such as unions and intersections from the probabilities of individual events.	Probability Axioms of probability Extension of Theorem 3.6 to n events	3.3 -3.5
6-8	To calculate conditional probabilities of events: Determine the independence of events and use independence to calculate probabilities Use Bayes' theorem to calculate conditional probabilities	Conditional Probability: Independent events Bayes' theorem Mathematical expectation	3.6 -3.7
9-10	To determine probabilities from probability mass functions and cumulative distribution functions	Probability Distributions: Random variables Binomial distribution Hyper geometric distribution	4.1 -4.3
11-12	To understand means and variances for the discrete random variables	Mean & Variance of a probability distribution Chebychev's theorem	4.4 -4.5
13-16	To find an appropriate discrete probability distribution to calculate probabilities in specific applications	Poisson approximation to Binomial distribution Poisson processes Geometric distribution Multinomial distribution	4.6 -4.9
17-19	To determine probabilities from probability density functions & cumulative distribution functions	Probability Densities Continuous random variables Normal distribution The normal approximation to binomial distribution	5.1 -5.3
20-22	To find an appropriate continuous probability distribution to calculate probabilities in specific applications.	Uniform distribution Lognormal distribution Gamma distribution Beta distribution	5.5 -5.8
23-26	To use joint probability mass functions and joint probability density functions to calculate probabilities Calculate marginal and conditional distributions from joint probability distribution	Joint distributions & densities; marginal and conditional distributions and densities; Properties of expectations	5.10
27-30	To understand the role of the central limit theorem and the role of $t$ , $X^2$ and $F$ as sampling distributions	Sampling Distributions Population & random samples Sampling distribution of mean ( $\sigma$ known) Sampling distribution of mean ( $\sigma$ unknown) t-distribution Sampling distribution of variance: $X^2$ and $F$ distributions	6.1-6.4

31-33	To understand the general concepts of estimating the parameters of a population, properties of point estimation Construct confidence intervals on the mean of a probability distribution.	Point estimation, Interval estimation. Estimation of proportions	7.1 -7.2 & 9.1
34-37	To formulate the decision-making problems as hypothesis tests and test hypothesis on the mean of a population	Tests of hypotheses: Null hypotheses and alternative hypotheses Hypotheses concerning one mean	7.4 -7.6
38-40	How the method of least squares is used to estimate the parameters in a linear regression model	Curve fitting Method of Least Squares Inferences based on Least Squares Estimators Correlation	11.1, 11.2 & 11.6

### 5.Evaluation Scheme:

Component	Duration (hr/min)	Weightage (%)	Course coverage (Lect. Nos.)	Date/Time	Remarks
Test-1	50 min	12	1-10	31 Jan 2012 9.10-10:00AM	Closed Book
Quiz-1	15 min	4	10-15	Surprize Quiz	Closed Book
Mid Term Examination	1 hr	20	1-19	28Feb,2012 10:00-11AM	Closed Book
Test-2	50	12	21-30	10April,2012; 9:10-10:00AM	Closed Book
Quiz-2	15min	4	31-35	Surprize Quiz	Closed Book
Academic Interaction	continuous	4	----	----	Evaluated by the instructor in the middle and at the end of the semester
Regularity in class	continuous	4	----	-----	Evaluated* by the instructor
Comprehensive Examination	3 hr	40	1-40 (Entire Syllabus)	8May,2012; 10:00AM-1:00PM	Closed Book

\* These 4 marks would be proportionally distributed for attendance of the student over and above the mandatory 75% attendance.

### 6. Chamber Consultation Hour: Fridays from 4:00-5:00PM.

**7. Make-up Policy:** Make-up test will be administered to students under genuine circumstances. However, prior and proper intimation to the concerned instructor is a must.

Date: \_\_\_\_\_

(Instructor-in-charge)

# THE ICFAI UNIVERSITY JAIPUR

## Faculty of Science and Technology

### Course Handout

Second Semester, 2011- 2012

Course Code/No.	Course title	L P U
EGL102	ENGLISH LANGUAGE SKILLS-II	3 0 3

**1. Instructor-in-charge :** Dr. Teenna Sawhney

Room No. 55 IUJ

Email: teenna.sawhney@gmail.com

Ph: +919414045704 (Cell)

### 2. Scope and Objective of the course:

The study of Language skills aims at making the students understand the principles of language skills and to be able to use them effectively.

### 3. (a) Textbook(s):

T1: English LanguageSkills-II	Author	Publication	Year
	Aruna Koneru	Icfai University Publication	2008

### (b) Reference book(s):

R3:Communication Skills, 2 <sup>nd</sup> ed	Author	Publication	Year
	Leena Sen	Prentice Hall of India	2007

(c) Other readings: English Newspapers, Soft Skills Journal IUP

### 4.Lecture-wise plan

Lecture/Session Nos.	Learning Objectives	Topics to be covered	Reference (Chapter/Sec./Page Nos (of Text/Ref. Books)
1-2	Recognize stress pattern of English words-Identify prominent syllable in the word- Know the articulation of monosyllable and multisyllable words- Identify the accentual pattern of compound words- Identify how the change of stress brings change in meaning – Identify how the change of stress brings change in parts of speech also.	Word Accent	T1:Chapter 1

3-4	Know the stress pattern of the sentence- Know the pronunciation of words in isolation and in the connected speech- Identify the weak forms of auxiliary verbs, conjunctions, prepositions, articles, personal pronouns in the connected speech.	Sentence Accent	T1:Chapter 2
5-6	Overcome common problems of speech like elision, or transposition of sounds- Understand how pronunciation brings about change of meaning- Pronounce inflectional suffixes correctly- -Pronounce endings of words correctly- Overcome enunciation problems in speech- Acquire the pronunciation of consecutive consonants in words and in sentences	Effective Speech	T1:Chapter 3
7-8	Develop an idea into a meaningful paragraph- Know the purpose of writing a paragraph- Understand unity and coherence of a paragraph- Know the techniques to develop an effective paragraph- Know the various principles for writing an effective paragraph- Know how to write topic sentences- Know various types of paragraphs- Write an effective paragraphs.	Writing Paragraphs	T1:Chapter 6
9-12	Know the importance of group discussion- Develop the skill of analyzing the different aspects of the problem- Improve oral communication skills- Avoid interpersonal conflicts in the discussion- Convince others with your arguments- Develop intensive listening skills- Concede to other's	Group Discussions	T1:Chapter 5

	point of view- Present your views politely and courteously- Regulate the rate of your delivery.		
13-15	Learn to comprehend the passage- Identify the context- Identify the content and overall idea of the topic- Organize the material in a logical way without distorting the meaning- interpret the given material based on context- Express the given document in simple language.	Paraphrase Writing	T1:Chapter 7
16-17	Identify the main points of the document- Identify the overall idea of the given material- Organize the information in a logical way- Make notes after reading the document- Take notes while listening to a talk- Take notes while participating in a discussion.	Note Making	T1:Chapter 8
18-19	Identify the essential ideas of a given document- Identify non-essential ideas- Express an elaborated material in a concise way- Reproduce important ideas and supporting points effectively- Reduce the lengthy and repetitive explanation- Enhance the skill of reading- Increase the skill of quick comprehension- Develop the skill of summarizing the information- Develop the effective skill of writing.	Precis Writing	T1:Chapter 9
20-21	Develop the skill of comprehension- Identify the main points of the original material- Discriminate, evaluate and select the essential points- Organize the points effectively- Condense the information without changing the original meaning.	Writing Summaries	T1:Chapter 10

22-23	Know the important points to be covered in letters of enquiries and quotations- Write the openings and closings of these letters effectively- Know that what you have to write in the body of these letters- Develop the skill of drafting these letters.	Enquiries and Quotation Letters	T1:Chapter 11
24-25	Know the points to be covered in each of these letters- Write effective beginnings and closings of these letters- Know that what points you have to write in the body of these letters- Develop the skill of drafting these letters.	Orders and Acknowledgement Letters	T1:Chapter 12
26-27	Know the points to be covered in claim and adjustment letters- Write and closing of these letters effectively- Know how to develop the body of these letters- Develop the art of writing business letters.	Complaint and Adjustment Letters	T1:Chapter 13 R3:Chapter 7
28-29	Know the structure of sales letters- Features of sales letter- Arrest the attention of buyers towards your product- Arouse interest in the minds of the prospective buyer- Convert the reader of your letter into a buyer of your product- Know how to write an introductory paragraph of sales letter- Know how to develop the body of sales letter- Know how to conclude the sales letter.	Sales Letters	T1:Chapter 14
30-31	Know what is meant by circular letter- Know what points we have to cover in circular letters- Learn to use 'you-approach in circulars'.	Circulars	T1:Chapter 15

32-35	Analyze the given situation and formulate argument- Acquire clarity of expression- Present arguments with logical reasoning- Avoid convoluted arguments- Identify proposition, issue and argument- Acquire speaking skills- Convince others with your arguments.	Debate	T1:Chapter 4
36	Write correct spellings- Know different spellings for the same sound- remove confusion in spellings- Know the variant spellings- Develop self- confidence about your ability to spell accurately.	Learning Spelling	T1:Chapter 16
37-38	Write sentences correctly- Understand the meaning of the sentences- Identify different types of punctuation marks- use punctuation marks appropriately	Punctuation	T1:Chapter 17
39-42	Identify errors in using nouns, pronoun, prepositions, verbs, adjectives, adverbs and and conjunctions- Overcome your mistakes- Write without errors	Common errors in English	T1:Chapter 18



#### 4.Evaluation Scheme:

Component	Duration (hr/min)	Weightage (%)	Course coverage/ Syllabus/ Lec No.	Date	Remarks
Test I	50 min	10	Chp:1-3 Lec 1-6	3rd Feb 2012 Friday 4.10 -5.00 pm	Closed Book Written Test
Group Discussion	-	5	Chp:5 Lec 9-12	21 <sup>st</sup> Feb 2012 Tuesday 2.10-3.00pm/3.10- 4.00pm	Each student will be evaluated individually for GD
Mid term Examination	1 hr	20	Chp:1-10 (not incldng 4) Lec 1-21	1 <sup>st</sup> March 2012 Thursday 3.00 -4.00 pm	Closed Book Written Examination
Test-III	50 min	12	Chp:11-15 Lec 22-31	13 Apr 2012 Friday 4.10 -5.00 PM	Closed Book Written WrittenTest
Debate	-	5	Chp:4 Lec 32-35	27 <sup>th</sup> April Friday 2.10-3.00pm/3.10- 4.00pm	Each student will be evaluated individually for Debate
Academic Interaction	Continuous	4	-		Evaluated by the instructor in the middle and at the end of the semester
Regularity in class	Continuous	4	-		Assigned by the instructor *
Comprehensive Examination	03 hrs	40	Chp:1to 18 Lec 1-42	12th May 2012 Saturday 10.00AM- 1PM	Closed Book Written Examination

\* These 4 marks would be proportionally distributed for attendance of the student over and above the mandatory 75% attendance.

**5.Chamber Consultation Hour:**

Students can see the undersigned in her room between 5pm to 6pm every Monday.

**6.Make-up Policy:**

Make-up test will be administered to students under genuine circumstances. However, prior and proper intimation to the undersigned is a must.

**8. General:**

Lectures would be interactive and student centric requiring extensive class participation.

Group Discussion rounds would be of 10-20 min duration.

Students may speak 'For' or 'Against' the Topic in a Debate.

Date: **02.12.2011**

Teenna Sawhney  
**Name & Signature of I/C**

**THE ICFAI UNIVERSITY JAIPUR**

**Faculty of Science and Technology**

**Course Handout**

**Second Semester: 2011 - 2012**

Course Code/No.	Course title	L	P	U
CHEM 102	Chemistry II	3	0	3

**1. Instructor-in-charge** : Dr Jitendra Kumar Gupta

**Instructor(s):**

**i. Dr Jitendra Kumar Gupta**

**Room No. 53**

**Email:** jkgupta@iujaipur.edu.in

**Mobile No.** 9799562212

**2. Scope & Objective of the course:** To expose the students to the fundamentals of inorganic and organic chemistry. This course introduces the students to the theory and mechanisms behind the structures and the reactions involved in inorganic and organic chemistry, respectively.

**3. (a) Textbook(s):**

T1	Concise Inorganic Chemistry, J.D. Lee, Black Well Science, OUP, 5th Edition, 1996
T2	Organic Chemistry, R.T. Morrison and R. Boyd, Prentice- Hall, Seventh Edition, 2011.

**(b) Reference book(s):**

R1	Organic Chemistry, Bruice, Pearson Education, Third Edition, 2002.
R2	Francis A. Carey Organic chemistry, Tata McGraw-Hill, Third Edition, 2002.
R3	Ernest L Eliel, Stereochemistry of Carbon Compounds, Tata McGraw-Hill Edition, 2002.
R4	Huheey, Keiter & Keiter, Inorganic Chemistry, Pearson Education, 2003.

**(c) Other readings:** <http://www.sciencemag.org/>;

<http://www.nature.com/chemistry/index.html> *chemistry@nature.com* brings together all of the chemistry content from Nature Publishing Group in one place as a unique resource for chemists and the chemistry community.

In addition, this site is your central hub for chemistry news, research highlights, blog posts and podcasts.

#### 4. Lecture-wise plan

Lecture Nos.	Learning Objective	Topics to be covered	Reference (Chap./Sec./ Page Nos. of Text Book)
1-2	<b>Coordination Chemistry:</b> Basic theory	i) Werner's work, recent studies on complexes, Effective atomic number	T1 195-198
3	To understand Werner theory in light of experimental approach	Experimental approach based on Werner theory and their implication	T1 198-200
4	To understand the structure, properties, formation, Stability	iv) Shapes of d orbital. Valence bond theory.	T1201 - 204
5-8	To understand C.F.T and comparison with V.B.T on	v) Crystal Field Theory of Octahedral Complexes, Magnetism	T1204 - 214 T1225-226
9	To understand geometry distortion on octahedral complex	vi) Tetragonal distortions of Octahedral Complexes (Jahn-Teller Distortions)	T1214 - 217
10	Application of CFT on Square planer and Tetrahedral complex	vii) Square Planar and Tetrahedral Complexes.	T1217 - 221
11	To understand Isomerism in complex compounds	iii) Isomerism	T1222-224,
12-13	To understand the way to write structural formulae and their name	ii) Nomenclature of coordination compounds	T1230-232
14	To understand chelates	iii) Chelates	233-236
15-16	Stereo chemistry To understand the perspective and spatial orientations of atoms in an organic molecule.	i) Enantiomerism, Chirality	T2 5AII.1-5AII.5
17-18	To understand stereo isomerism and their nomenclature	ii) Configuration, Specification Reactions of Stereo isomers	T25AII.6-5AII 16
19	To understand geometrical isomerism	iii) Geometrical isomerism	T25AII 17.
20	To understand stereo isomerism through reactions	iv) Reactions of Stereo isomers	T25AII 18-5A II 24
21	To understand conformational isomerism of simple aliphatic compounds	v) Conformational Isomerism	T25 BI.9-5BI10
22-23	To understand conformational isomerism of Cyclic aliphatic compounds	vi) Factors affecting the stability of conformations and stereo isomerism of cyclic compounds	T25B I 11-5 BI 12, T25BII 3
24	To understand E & Z configuration of alkenes/ alkynes	vii) Alkenes/alkynes	T25B II.2
25	<b>Organic reaction mechanisms</b> To understand the mechanistic pathways of organic reactions. Gives an idea about reactions and reagents.	i) Nucleophilic aliphatic substitution reactions.	T28.5 – 8.9
26	To understand Mechanism of nucleophilic reaction of II <sup>nd</sup> order and their stereochemistry of alkyl Halides	ii) S <sub>N</sub> 2 Reaction, Stereo chemistry	T28.10-8.12

27-28	To understand Mechanism of Nucleophilic I <sup>st</sup> Order reaction of alkyl Halides	iii) S <sub>N</sub> 1 Reaction, Stereochemistry, Relative stability of carbocations	T28.13-8.18
29	To understand comparisons between Nucleophilic reactions	iv) SN2 Vs SN1	T28.19
30-32	To understand Elimination reaction and their Mechanism of alkyl Halides	v) Elimination reactions, E2 mechanism	T26A.13-6A.20
33-34	To understand I <sup>st</sup> order Elimination Reaction and their mechanism of alkyl Halides	vi) E1 mechanism	T26A.21-6A.25
35	To understand elimination reaction of Alcohols and their Mechanism	vii) Dehydration of alcohols	T26A.26
36-37	To understand Electrophonic addition reactions on simple alkenes	viii) Electrophonic addition reactions	T2 6A.28-6A.29, 6A.32- 6A.39, 6A.42-6A.45
38-39	To understand free radical reaction Mechanism on alkenes leads to polymerization reaction	ix) Free radical reactions	T2 6A.47-6A.50
40-41	To understand Grignard Reagents and formation of alcohols from Grignard reagents	x) Synthesis of alcohols.	T212.12- 12.13

#### 4. Evaluation Scheme:

Component	Duration (hr/min)	Weightage (%)	Course coverage (Lec. Nos.)	Date & Time	Remarks
Test I	50 min	12	1-10	01 Feb 2012 11.10AM -12:00 Noon	Closed book
Mid Term Examinaton	1 hr	20	1-19	29 Feb 2012  10.00 -11.00 AM	Closed book
Test III	50 min	12	20-29	11 Apr 2012 11.10AM -12:00 Noon	Closed book
#Surprise Quizzes (5)	15 min each	8	----	Will be held after every 08 lectures	Closed book
Academic Interaction	continuous	4	----	----	Evaluated by the instructor in the middle and at the end of the semester

Regularity in class	continuous	4	-----	-----	Evaluated by the instructor *
Comprehensive Exam	3 hrs	40	1-41 (Entire Syllabus)	9 May 2012 10.00AM-1 PM	Closed book

\* These 4 marks would be proportionally distributed for attendance of the student over and above the mandatory 75% attendance.

# Surprise quizzes will be held after the completion of every 08 lectures of the syllabus by the instructors and the previous ten lectures will be summed up with the next lectures for the content of the next quiz. Out of 5 quizzes, 04 best quizzes will be chosen.

**4. Chamber Consultation Hour:**

Dr. J. K. Gupta will be available at 4 pm to 6 pm on Monday (for Sec B & Sec A)

**5. Make-up Policy:** Make-up test/quiz will be administered to students under genuine circumstances. However, prior and proper intimation to the concerned instructor is a must.

**8. General:** Students should bring their text books and calculators in the common hours.

**Date: 04 Jan 2012**

**Name & Signature of I/C**

**(Dr. Jitendra Kumar Gupta)**

# THE ICFAI UNIVERSITY JAIPUR

## Faculty of Science and Technology

### Course Handout

Second Semester: 2011- 2012

Course Code/No.	Course title	L	P	U
MATH 102	Mathematics II	3	0	3

**1. Instructor-in-charge:** Dr. Rajiv Lochan Pareek

**Instructor(s):**

i. Dr. Rajiv Lochan Pareek

Room No. 50

Email: [rlpareek@iujaipur.edu.in](mailto:rlpareek@iujaipur.edu.in)

ii. Mr. Niraj Kumar

Room No. 14

Email: [nkumar@iujaipur.edu.in](mailto:nkumar@iujaipur.edu.in)

**2. Scope & Objective of the course:** What mathematics can do, and what linear algebra does so well is to see patterns that are partly hidden in the applications to physics, engineering, probability, statistics and economics. Here, this Course is designed to provide basic concepts of Linear Algebra along with an introduction to the theory of functions of a complex variable.

**3. (a) Textbook(s):**

T1	Complex Variables and Applications, J. W. Brown, R. V. Churchill, Mc Graw-Hill, 7th ed, 2003.
T2	Linear Algebra, Kenneth Hoffmann, Ray Kunze, PHI, 2nd ed, 2011.

**(b) Reference book(s):**

R1	An Introduction to Linear Algebra, V. Krishnamurthy, V. P. Mainra, J. L. Arora,, Affiliated East-West Press 2002 (For additional problems in Linear Algebra).
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#### 4. Lecture-wise plan

Lecture Nos.	Learning Objective	Topics to be covered	Reference (Chap./Sec./ Page Nos. of Text Book)
	Complex Variables & Applications :		
1-2	To understand algebraic and geometric properties of complex numbers	Review; Regions in the Complex Plane	Sec 1-10,11 (T1)
3	To learn functions of a complex variable and the concept of limits of functions	Functions of complex Variable, limits. Mappings (Self study)	Sec 12-14
4	To learn the concept of Riemann Sphere, C-R equations and harmonic functions	Theorems on limits, Continuity	Sec 15-18
5-7		Derivatives, C-R equations, Analytic Functions, Harmonic	Sec 19-26

8-9	To understand the properties of elementary Functions of a complex	Exponential, logarithmic functions, complex exponents	<b>Sec 29-33</b>
10,11		Trigonometric, Hyperbolic functions and their inverses	<b>Sec 34-36</b>
12,13	To learn the concepts of integrals and anti-derivatives of complex valued	Contour integrals, Anti derivatives	<b>Sec 37-45</b>
14-16	Develop the skill of applying these theorems	Cauchy theorem, Cauchy Integral Formula, Morera's theorem	<b>Sec 46-52</b>
17	To obtain the concept of boundedness of an entire function in the complex	Liouville's Theorem, Maximum Modulus Principle	<b>Sec 53,54</b>
Self study	Sequences & Series	Convergence of sequences and series	<b>Sec 55,56</b>
18,19	To understand the form of Taylor's and Laurent series for an analytic function of a complex variable	Taylor's and Laurent series	<b>Sec 57-62</b>
20-21	Develop the skill to find the residues, poles and zeros of analytic functions	Residues, Poles and Zeros of analytic Functions	<b>Sec 68-71 (Theorem 3 of Sec 75 is Omitted)</b>
22-23	Evaluation of certain types of definite and improper integrals using the theory of residues	Application of residues	<b>Sec78-81,85</b>
Self study	Algebraic Structure	Fields	<b>T2:Section 1.1</b>
	Linear Algebra:		
24	To understand the concept of equivalent system of linear equations	System of linear equations	<b>T2:1.2</b>
25	To reduce the given matrix to row reduced matrix using elementary row operations	Matrices and Elementary Row Operations	<b>T2:1.3</b>
26	To find solutions of system of homogeneous linear equations $AX=0$ by reducing the matrix A to row reduce echelon form	Row-Reduced Echelon Matrices	<b>T2:1.4</b> and from <b>R1</b> : Problem sets 5.7 problems 1,5, 5.8-All problems.
27,28	Determining the invertible matrix using elementary row operations	Matrix Multiplication, Invertible Matrices	<b>T2:1.5,1.6</b> and from <b>R1</b> 5.4- problems 2 to 14,16,21
29,30	To understand the definition of vector space, subspace and span of a set.	Vector Space, Subspaces	<b>T2:2.1,2.2</b> and from <b>R1</b> 3.1-All,3.2-All, 3.3-All 3.4-problems 1-5, 8, 9, 10
31,32	To understand the definition of linearly independent and dependant sets, basis and dimension of a vector space	Bases and Dimension, Coordinates	<b>T2:2.3,2.4</b> and from <b>R1</b> 3.5-All,3.6-All



33-35	To understand the concept of row equivalence and row space	Row Equivalence and Computations concerning Subspaces	<b>T2:</b> 2.5, 2.6 and from <b>R1</b> 3.5-All,3.6-All
36-40	Concept of linear transformations and Matrix representation	Linear Transformations, The Algebra of linear Transformations, Isomorphism, Representation by matrices	<b>T2:</b> 3.1,3.2,3.3,3.4 and from <b>R1</b> 4.1-All,4.2 All, 4.3-All 4.4 -All, 4.5-All, 4.6-All, 4.7-All, 5.1-All, 5.2-All, 5.3-All, 5.5-All
41,42	To find the Eigenvalues and Eigenvectors of a given linear operator over a field	Matrices, Eigenvalues, Eigenvectors and from R1 6.8-All	<b>T2:</b> 3.4,6.1,6.2

### 5.Evaluation Scheme:

Component	Duration (hr/min)	Weight age (%)	Course coverage (lect. no.)	Date	Remarks
Test-1	50	12	1-9	30-01-2012	Closed Book
Surprise Quiz-1	15min	4		Any time after Test-1 and before Mid Term	Closed Book
Mid Sem Exam	1 hr	20	1-20	02-03-2012	Closed Book
Test-2	50min	12	21-30	09-04-2012	Closed Book
Surprise Quiz-2	15min	4	31-35	Any time after Test-2 and before Compre	Closed Book
Comprehensive Examination	3 hr	40	1-42 (Entire Syllabus)	07-05-2012	Closed Book
Academic Interaction	continuous	4	----	----	Evaluated by the instructor in the middle and at the end of the semester
Regularity in class	continuous	4	----	-----	Assigned by the instructor *

\* 4 marks would be proportionally distributed for attendance of the student over and above the mandatory 75% attendance. This means, a student with just 75% attendance would not secure any mark, while one with 100% attendance would get 4 marks.

**6. Chamber Consultation Hour:** 5:00 PM to 6:00 PM (Monday)

**7. Make-up Policy:** Make-up test will be administered to students under genuine circumstances. However, prior and proper intimation to the concerned instructor is a must.

Date: \_ \_ \_ \_ \_

**Name & Signature of I/C**

# THE ICF AI UNIVERSITY JAIPUR

## Faculty of Science and Technology

### Course Handout

Second Semester: 2011- 2012

Course Code/No.	Course title	L	P	U
PHY 102	Physics II (Electricity and Magnetism)	3	0	3

#### 1. Instructor-in-charge: Mr. Niraj Kumar

Instructor:

Mr. Niraj Kumar

Room No. 14

Email: [nkumar@iujaiipur.edu.in](mailto:nkumar@iujaiipur.edu.in)

**2. Scope & Objective of the course:** Physics II forms the Second part of a two-semester comprehensive course on core level physics to be taught to all engineering students. The course aims at developing an understanding of the basic principles involved in electrostatics and electromagnetism and their practical application. The emphasis is on improving the problem solving skills of students.

#### 3. (a) Textbook(s):

T1	Physics, Vol. 2, Robert Resnick, David Halliday and Kenneth S. Krane, fifth edition, John Wiley & Sons, 2002.
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#### (b) Reference book(s):

R1	Fundamentals of Physics, Robert Resnick, David Halliday and Jearl Walker, sixth edition, John Wiley & Sons., 2001.
R2	Physics, Cutnell and Johnson, fifth edition, John Wiley and sons, 2001.
R3	Principles of Physics, Raymond A. Serway and John W. Jewett, Jr., Harcourt College Publishers, Third Edition, 2002.
R4	Introduction to Electrodynamics, David J Griffiths, PHI, Third Edition, 2002.

#### 4. Lecture-wise plan

Lecture Nos.	Learning Objective	Topics to be covered	Reference (Chap./Sec./ Page)
1-2	To Understand electric Charges and the fundamental electric force between two charged bodies, Coulomb's	Coulomb's law, continuous charge distributions.	<b>T1: Sec. 25.4, 25.5</b>
3-5	To understand electric fields due to charges at rest	Electric field of point charges, continuous charge distributions, field lines, point charge and dipole in an electric field.	<b>T1: Sec. 26.1 to 26.7</b> Exclude optional topics
6-8	To understand Gauss' law and its applications	Flux of a vector field, flux of electric field, Gauss' law, its applications, Gauss' law and conductors.	<b>T1: Sec. 27.1 to 27.6</b>

9-11	To study electrostatics using energy concepts	Electric potential, potential due to point charges and continuous charge distribution, calculating field from potential, potential from field, equipotential surfaces, potential of a charged conductor.	<b>T1: Sec.</b> 28.1 to 28.9 Exclude optional topics
12-13	To study electrical properties of materials	Types of materials, conductor in an electric field, insulator in an electric field, Ohm's law, Ohmic materials.	<b>T1: Sec.</b> 29.1 to 29.6 Exclude optional topics
14-16	To be able to understand definition of Capacitance and how the energy is stored in capacitors	Capacitance, Calculating the capacitance, Capacitors in series and parallel, Energy storage in an electric field, Capacitor with dielectric.	<b>T1: Sec.</b> 30.1 to 30.6 Exclude 30.4
17-20	To study the effect of magnetic field on moving charges	Magnetic interactions, magnetic poles, force on a moving charge, circulating charges, force on a current carrying wire, Hall effect, torque on a current loop	<b>T1: Sec.</b> 32.1 to 32.6 Exclude optional topics
21-24	To study magnetic fields due to moving charges and currents	Magnetic field due to moving charge, due to current, parallel currents, field of a solenoid, Ampere's law.	<b>T1: Sec.</b> 33.1 to 33.5
25-28	To understand Faraday's law of induction and its applications	Faraday's law, Lenz' law, motional emf, induced electric fields	<b>T1: Sec.</b> 34.1 to 34.4, 34.6
29-30	To study magnetic dipole moments of individual atoms and magnetic form of Gauss' law	Magnetic dipole and force on a magnetic dipole in a non-uniform field, Magnetization, Gauss' law for magnetism	<b>T1: Sec.</b> 35.1, 35.2, 35.4, 35.7
31-33	To be able to understand definition of Inductance and its calculations, energy storage in magnetic field	Inductance, Calculating the inductance, Energy storage in a magnetic field	<b>T1: Sec.</b> 36.1 to 36.4 Exclude 36.3
34-35	To study displacement currents and Maxwell's equations	Equations of electromagnetism, Maxwells equations, induced magnetic fields and displacement currents	<b>T1: Sec.</b> 38.1 to 38.3
36-37	To be able to understand Nature of Light	Concept of photons, Thermal radiation, photoelectric effect	<b>T1: Sec.</b> 45.1 to 45.3
38-39	To be able to understand Nature of Matter	Matter waves, de Broglies hypothesis, experimental verification by Davisson and Germer experiment, uncertainty principle	<b>T1: Sec.</b> 46.1 to 46.4 exclude 46.3
40-41	To study atomic spectra of hydrogen atom	Bohrs Model of the hydrogen atom, Ground state of the hydrogen atom, Atomic Spectra	<b>R3: Sec.</b> 29.7

## 5.Evaluation Scheme:

Component	Duration (hr/min)	Weightage (%)	Course coverage (Lecture Numbers)	Date/Time	Remarks
Test-I	50 min	12	1-8	2 <sup>nd</sup> Feb, 2012/ 10:10 AM- 12:00 Noon	Closed Book
Surprise Quiz-I	15 min	4	Course covered till date	----	Closed Book
Mid term Examination	1 hr	20	1-20	1 <sup>st</sup> March, 2012/ 10:00 to 11:00 AM	Closed Book
Test-III	50 min	12	21-30	12 <sup>th</sup> April, 2012/ 10:10 AM-12:00 Noon	<b>Open Book</b>
Surprise Quiz-II	15 min	4	Course covered after Mid term	---	Closed Book
Academic Interaction	continuous	4	----	---	Evaluated* by the instructor
Regularity in class	continuous	4	----	---	Evaluated** by the instructor
Comprehensive Examination	3 hr	40	1-41 (Entire Syllabus)	10 <sup>th</sup> May, 2012/ 10:00 AM-1:00 PM	Closed Book

\* These 4 Marks would be evaluated for academic interaction & Home assignments in the middle and end of the semester for each 2 Marks.

\*\* These 4 marks would be proportionally distributed for attendance of the student over and above the mandatory 75% attendance.

**6. Chamber Consultation Hour:** 5:00 PM to 6:00 PM (Monday)

**7. Make-up Policy:** Make-up test will be administered to students under genuine circumstances. However, prior and proper intimation to the concerned instructor is a must.

**8. General:** Textbooks, Reference books & class notes are allowed for open book examination.

Date: 2<sup>nd</sup> January 2012

(Instructor-in-charge)

**The ICFAI University Jaipur**  
**Faculty of Science and Technology**  
**Course Handout**  
**Second Semester: 2011- 2012**

Course Code/No.	Course title	L	P	U
TA 102	Workshop Practice	2	4	4

**1. Instructor-in-charge:** Mr. Pramod Kumar Arya

Room No. 54

Email: [arya.icfaijpr@gmail.com](mailto:arya.icfaijpr@gmail.com)

**2. Scope & Objective of the course:** This course is designed to make the students familiar with the basic manufacturing processes used for producing finished articles out of wood, ferrous and non-ferrous metals. The processes covered include Casting, Joining processes, Metal Forming, Sheet Metal work and Modern manufacturing processes. The students are exposed to modern manufacturing courses like the application of non-conventional resources in manufacturing and usage of computers in manufacturing. A brief review of the properties and heat treatment of common engineering materials and of measuring and gauging tools are also included. At the end of the course the students will be familiar with basics of all manufacturing processes.

In practical classes the student is required to acquire knowledge of handling some of the basic general purpose machine tools, carpentry work, foundry, fitting independently.

**3. (a) Textbook(s):**

T1	B.S.Nagendra Parashar, R.K.Mittal, "Elements of Manufacturing Processes", PHI, 2007.
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**(b) Reference book(s):**

R1	J.S.Campbell, "Principles of Manufacturing Materials and Processes" Tata McGraw-Hill, 1999.
R2	WAJ Chapman, Butterworth -Heinemann Workshop Technology Part I, II & III , 2001,1995,1998 respectively.
R3	E. Paul DeGarmo, J.T.Black Materials and Processes in Manufacturing, PHI,9th ed.,
R4	P Kannaiah & KL Narayana, Workshop Manual SciTech Publications, 2005

**4.Lecture-wise plan**

Lecture Nos.	Learning Objective	Topics to be covered	Reference (Ch./Sec./ Page Nos. of Text Book)
1	Basics of Manufacturing	Manufacturing Concepts	<b>T1: Sec. 1.1</b>
2-3	Properties of Materials	Engineering Materials	2.1, 2.4 to 2.8
4-5	Quality aspects in Manufacturing	Measurements and Quality in Manufacturing	3
6-7	Basics of metal cutting operation	Theory of Metal Cutting	4.1 to 4.6, 4.10 to 4.16
8-10	Different operations on lathe	Turning Operations	5.1,5.2,5.4, 5.6 to 5.11

11	Hole making and allied operations	Drilling and Allied operations	6
12-13	Production of flat surfaces	Shaping, Planning and Slotting operations	7
14-15	Production of complex surfaces	Milling Operations	8
16	Operations to produce fine surface finish	Finishing Operations	9.1 to 9.5
17	Property manipulation of materials	Heat treatment and hot and cold working of materials for Material Property Manipulation	10.6 to 10.11
18-20	Production of parts by casting process	Casting processes	11.1 to11.7, 11.9 to11.12, 11.14
21-22	Production of parts by forming process	Metal Forming Processes	12.1 to12.2.2, 12.2.4,12.3, 12.4,12.5
23	Sheet metal working operations	Sheet-metal working	13.1 to13.3, 13.5 to 13.9
24	Powder metallurgy	Powder metallurgy manufacturing process	14
25-26	Joining processes like welding, brazing, etc	Mechanical Joining Processes	15.1 to15.4.2, 15.5 to 15.7
27	Using non -conventional resources in manufacturing	Non Conventional Resources in Manufacturing	17.1 to 17.3, 17.4.3,17.4.4
28	Applications of computers in manufacturing	Computer Controlled Manufacturing Processes	18.1 ,18.2, 18.5,18.7.0
29	Feasibility study in manufacturing	Economics of manufacturing	19
30	Power transmission process in machine tools	Power transmission in machine tools	21.1 to 21.2.3, 21.2.5, 21.5.0, 21.5.1,21.5.3, 21.5.4 (up to compound gear train)

### 5.Evaluation Scheme:

Component	Duration (hr/min)	Weight age (%)	Course coverage	Date	Remarks
Test-1	50 min	8	1-8	02 Feb 2012 , Thursday , 4.10 -5.00 PM	Closed Book
Mid Term Examination	1 hr	8	1-20	29 Feb 2012 , Wednesday , 3.0PM -4.0 PM	Closed Book
Practical	continuous	50	----	----	
Academic Interaction	continuous	4	----	----	Evaluated* by the instructor

Regularity in class	continuous	4	----	----	Evaluated** by the instructor
Comprehensive Examination	3 hr	26	(Entire Syllabus)	13 May 2012 , Sunday Batch A: 9.0 AM – 12.00 PM Batch B: 3.0 PM – 6.0 PM	Closed Book

\* These 4 Marks would be evaluated for overall academic interaction, Home assignments, Behavior in classroom etc. in the middle and end of the semester for each 2 Marks.

\*\* These 4 marks would be proportionally distributed for attendance of the student over and above the mandatory 75% attendance.

**6. Chamber Consultation Hour: Friday 5.0-6.0 PM**

**7. Make-up Policy:** Make-up test will be administered to students under genuine circumstances. However, prior and proper intimation to the concerned instructor is a must.

**8. General:** Textbooks, Reference books, class notes, Workshop manual are allowed for Lab record preparation.

Date: \_\_\_\_\_

**(Instructor-in-charge)**



# THE ICFAI UNIVERSITY JAIPUR

## Faculty of Science and Technology

### Course Handout

Second Semester: 2011- 2012

Course Code/No.	Course title	L P U
TA 104	Computer Programming II	3 0 3

**1. Instructor-in-charge** : Mr. A. K. Saini

**Instructor(s):**

Mr. A. K. Saini

Room No. 48

Email: aksaini@iujaipur.edu.in

*Group mail: iuj-btech-2011@googlegroups.com*

**2. Scope & Objective of the course:**

This course is offered as a Technical Art subject to engineering students having a focus on training them rigorously in the skill of structured programming language concepts – in particular C language and gearing them towards problem solving skills.

**3. (a) Textbook(s):**

Textbook(s) T1	“Programming In ANSI C”, E. Balaguruswamy, TMH 5 <sup>th</sup> edition, 2011
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**(b) Reference book(s):**

Reference book(s) R1	“Programming with C”, Gottfried, Schaum -TMH, 2nd Edition, 2002.
R2	“A Book on C”, Al Kelly & Ira Pohl , Pearsons, 4th Edition, 2001.
R3	“The C Programming Language”, Kernighan & Ritchie, 2nd Edition PHI, 2002.

**(c) Other readings:**

[http://highered.mcgraw-hill.com/sites/0070681821/student\\_view0/index.html](http://highered.mcgraw-hill.com/sites/0070681821/student_view0/index.html)

**4. Lecture-wise plan**

Lecture Nos.	Learning Objective	Topics to be covered	Reference (Ch./Sec./ Page Nos. of Text Book)
1	To introduce C	History, Sample program, basic structure of C, executing a C program	T1 Ch.1
2-3	To understand and able to describe Constants, Variables and Data types in C	Constants, variables, data types, storage classes, declarations, assigning values, etc	T1 Ch.2
4-5	To understand and able to describe Operators and Expressions of C	Arithmetic, relational, logical, assignment, increment and decrement bitwise, conditional operators, expressions, operator precedence, type conversions, etc.	T1 Ch.3
6	To understand Input, output operations in C	Reading, writing characters, formatted i/o, etc	T1. Ch.4

7	To understand and able to describe Decision making & branching in C	If statement, if - else, nested if, switch statement, etc	T1 Ch.5
8	To understand Decision making & looping in C	While loop, do loop, for loop etc	T1 Ch.6
9-10	To understand Arrays in C	One-dimensional, two-dimensional, multi-dimensional arrays, initialization, etc	T1 Ch.7
11-12	To understand Character arrays & strings in C	Declaring, initializing, reading, writing strings. Arithmetic operations on characters and string operations, etc	T1 Ch.8
13-15	Brief introduction about Low level Programming	Bitwise Operations, Bit fields	R1 Ch.13
16-17	To understand and able to write programs using Functions	Definition of function, function calls, return values	T1 Ch.9
18-20	To understand and able to write programs using User Defined Functions	Types of functions, passing arguments, nesting, recursion, passing arrays	T1 Ch.9
21-23	To understand Structures in C	Defining structure, accessing structure members, structure initialization, operations on individual members, arrays of structures	T1 Ch.10
24	To understand and able to write programs using Structures & Unions	Unions, Structures Vs Unions	T1 Ch.10
25	To understand Dynamic Memory Allocation	Introduction, Dynamic Memory Allocation, Malloc, Cal loc, Real loc	T1. Ch.13 (13.1-13.6)
26-27	To understand and able to write programs using Pointers	Introduction, accessing address of a variable, declaring pointers, initialization	T1. Ch.11 (11.1-11.5)
28-29	To write Programs with Pointers	Accessing a variable through pointer, pointer expressions, pointer increments and scale factor	T1. Ch.11 (11.6-11.9)
30-31	To understand and able to write programs using Pointers & Arrays	Pointers & Arrays, Pointers & Strings, Array of Pointers	T1. Ch.11 (11.10-11.12)
32-33	To understand and able to write programs using Pointers & Functions	Pointers as function arguments, functions returning pointers, pointers & structures	T1. Ch.11 (11.13-11.16)
34-36	To understand File Management	Opening a files, closing a file, I/O operations, Random Access to File, Command line arguments	T1. Ch.12
37-42	Data Structures using C	Implementation of linear linked lists, stacks, queues and binary trees	R2 Ch.10 T1. Ch.13

## 5.Evaluation Scheme:

Component	Duration (hr/min)	Weightage (%)	Course coverage (Lecture Numbers)	Date	Remarks
Test-1	50 Min	12	1-8	03 <sup>rd</sup> Feb,2012 Friday 12.10AM -1.00 PM	Closed Book
Mid Term Examination	1Hr	20	1-20	2 <sup>nd</sup> March,2012 Friday 10.00 -11.00 AM	<b>Open Book</b>
Laboratory Exercise	continuous	20	-----	-----	-----
Academic Interaction	continuous	4	----	----	Evaluated by the instructor in the middle and at the end of the semester
Regularity in class	continuous	4	----	-----	Evaluated by the instructor *
Comprehensive Examination	3 hr	40	1-42	11 <sup>th</sup> May,2012 Friday 10.00AM-1PM	Closed Book

\* These 4 marks would be proportionally distributed for attendance of the student over and above the mandatory 75% attendance.

### 6. Chamber Consultation Hour: Friday 5 PM- 6 PM

7. **Make-up Policy:** Make-up test will be administered to students under genuine circumstances. However, prior and proper intimation to the concerned instructor is a must.

8. **General:** Laboratory exercise marks will be awarded based on Correctness of programs, logic used to solve problem and execution of program. After compilation **Student** has to email soft copy of correct program along with screenshot of its final output.

Date: \_\_\_\_\_

**Signature of I/C**