LJ UNIVERSITY
University with a Difference

Course: B.Sc.IT, 3rd Semester

Subject Name: System Analysis and Design

Detailed Schedule

Day 1 & 2	
1	Data and Information ,Types of information, System definition, Characteristics of a system
2	**Exercise**: Discuss in brief the qualities of information system. How will u ensure that quality aspects of information are maintained? How can you say the information is good for XZY
3	**Exercise:** marks of a student in dissimilar subjects are the data. **Total marks of the student are information**
4	**Exercise:** When students get admission, to colleges or universities, they have to fill out an admission form. The form consists of raw facts i.e. student's name, father's name, and address, etc. The idea of collecting this data is, to sustain the records of the students throughout their study period
5	**Exercise:** Different organizations carry out surveys to identify the opinions of the people about their products. In these surveys, people also convey their ideas and opinions about diverse issues. The organizations use these ideas and opinions as data for the enhancement of their products also.
6	**Exercise:** During the census, governments gather the data of all citizens of a country. The government stores this data permanently, to make use of it for diverse purposes at different times.
7	**Exercise:** If we desire to find out, a list of all students who exist in Lahore, we will apply some processing on this data, this processing will provide us the desired list. This list is a form of processed data and will be called information.
8	**Exercise:** The data stored in a census is used to produce a different kind of information. For example, the government can also use it to discover the total number of graduates in the country or literacy rate in the country and also use the information in vital decisions to advance the literacy rates.
9	**Exercise:** An organization can use the view of the people as data. Then process it to

	produce information about its concern. For example, it can know how many people like or dislike its product. The organization can use this information for the perfection of its product.
10	**Exercise:** The number of visitors to a website by country is an example of data. Finding out that traffic from the U.S. is increasing while that from Australia is decreasing is meaningful information.
11	**Exercise:** to estimate the average marks of the students, this information will be also processed once more. In this processing, the information is used as data and average marks will be the information.
12	**Essential List:** 1. Define the following: Data, information and system. 2. What is information? Explain the types of information. 3. What is System? Explain the characteristics of system.
13	**Desirable List:** Information needs in managing Hospital management system Data: The number 40 000 is a piece of data, as is the name Iqbal Ahmed. Without anything else to help us, these two items of data are meaningless. Information: If we now say that 'Iqbal Ahmed is a teacher' and '$40 000 is a teacher's salary', the data is given meaning or context, and makes more sense to us. Knowledge: builds on the information. Knowledge is 'Iqbal Ahmed is a teacher and he earns $40 000 per year'. 5, 10, 15, 20 are items of data. Explain how these could become information and what knowledge could be gained from them.

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	Day 3 & 4
1	Elements of a system,
2	**Exercise:** Describe the following for library management system: 1. Outputs and inputs. 2. Processor(s). 3. Control. 4. Feedback. 5. Environment. 6. Boundaries and interface.
3	Types of systems, Organization as a System
	Exercise: Compare MIS and DSS
4	**Discussion:** What are the characteristics of a system? Describe how structured systems differ from object oriented systems? Role of SA and BA in library management system.
5	Roles of a Systems Analyst, Characteristics of System Analyst,
6	**Exercise:** For XYZ company
7	**Essential List:** 1. Explain the elements of a system. 2. Explain the types of system with example. 3. List three roles that a system analyst is called upon to play. Provide a definition for each of them. 4. What personal qualities are helpful to a system analyst? List them. 5. Explain the types of system with example.
	Desirable List: A system leads to a lot of planning and less of implementation. Do you agree, justify your answer.

The qualifications and experience of three candidates for the post of a systems analyst are given in table. Who would you choose as the most promising candidate? Why?

Name	Age	Education	Experience	Aptitude Test Stores
Mr. A.Kishan	30	B.Sc. Diploma in Computer Applications	Operators 3 years Programmer 4 years Senior Programmer 2 years	Verbal 60%. Quantitative 90%
Mr. K Vasantha	32	B.Sc. Diploma in Management	Office Manager 6 years	Verbal 90%. Quantitative 70%
Mr. P. Kumar	25	Master of Computer Applications. Diploma in Management	Management Trainees 1 year	Verbal 85%. Quantitative 80%

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Day 5 & 6	
1	The System development life cycle
2	**Discussion:** Contrast analysis and design. How are they similar, how do they differ? What role do models play in analysis and design?
4	**Exercise:** A customer wants to have an application which involves money transactions. In this case, the requirement has to be clear like what kind of transactions will be done, how it will be done, in which currency it will be done, etc. Once the requirement gathering is done, an analysis is done to check the feasibility of the development of a product. In case of any ambiguity, a call is set up for further discussion. Once the requirement is clearly understood, the SRS (Software Requirement Specification) document is created. This document should be thoroughly understood by the developers and also should be reviewed by the customer for future reference
5	**Essential List:** 1. List and briefly explain the seven phases of System Development Life Cycle (SDLC). 2. Contrast analysis and design. How are they similar, how do they differ? 3. What role do models play in analysis and design?
6	**Desirable List:** Case Study to print an online visitor diary after retirement Give the : Business requirement: Proposed solution SDLC Model adapted How Development Done

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Day 7 & 8	
1	Fact Finding Techniques: Interview Steps, ,
2	**Exercise**: Importance of fact finding and different ways of finding fact
3	Interview Steps, Document Review, Observation
4	**Discussion:** 1. When to use Document review. 2. Discuss the concept of Interviewing method in Information Gathering Techniques.(process of interview, advantages of interview, disadvantages of interview, type of questionnaires asked in interview)
5	**Exercise:** Practice Problem: choose a picture to depict bad consequences of incomplete requirement.
6	**Essential:** List five steps in interview preparation. Why are interviews essential in gathering information? How should a analyst prepare before the interview?
7	**Desirable:** Go to a medical store in your locality. Interview the owner and find out his information needs and prioritize them.

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Day 9 & 10	
1	Questionnaires
2	**Exercise**: Compare interview with Questionnaires
3	Surveys, Sampling and Research
4	**Discussion: 1.** When to use sampling 2. Importance of sampling
5	Joint Application Design.
6	**Exercise: Is JAD is suitable for library management system?**
7	**Discussion**: **for a system which is suitable fact finding technique and why?**
8	**Essential:** 1. Define what is meant by Sampling? 2. List four reasons a system analyst would want to sample data or select representative people to interview. 3. Explain open ended and closed ended questionnaires in details. 4. Define JAD **5.** List the potential benefits of using JAD.
9	**Desirable:** A sample question from the draft of the pohattam power company questionnaires reads: I have been with the company 20-upwards years 10-15 years upwards 5-10 years upwards Less than a year Check one that most applies. 1. What kind of a scale is the questions author using? 2. What errors have been made in the construction of the questions and what might be the possible responses? 3. Rewrite the questions to achieve clearer results. 4. Where should the questions you've written appear on the questionnaires?

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Day 11 & 12	
1	Feasibility and its types,
2	**Exercise:** For library management system Find out Operational and technical feasibility.
3	**Exercise:** When a housewife inspects the quality of the product she is purchasing from a grocery store, she is actually doing a material quality feasibility test. The farmer in order to eliminate the use of pesticides studies the operational and economic feasibility of organic methods of farming and its consequences on the output and quality of the crop. Due to increasing fuel rates and air pollution, a team of young entrepreneurs in order to launch an electric vehicle performs technical, resource and economic feasibility tests.
4	you to review the following statements and decide which type of feasibility applies: • Based on the future cost of support and maintenance, TCO will be very high. • The network will not be ready until next year, which might be too late. • Expensive training will be required. • The current system is well liked and effective, and users see no need for change. • The hardware is unreliable and will not integrate with other company systems. • The new system will cause a workforce reduction, and employees are very concerned. • The platform does not have capacity for future needs, and cannot be expanded. • The project does not meet the company policy for acceptable return on investment. • The projected benefits do not outweigh the estimated costs. • The software will not be available until May, and that will cause an unacceptable delay.
5	**Essentials:** What is feasibility? List and briefly discuss four feasibility tests. Distinguish between technical, operational and economial feasibility.
6	**Desirable:** A library receives 1300 journals of varying periodicities. The journals received have to be recorded and displayed. Action has to be taken when journals are not received in time or lost in mail. Unless request for replacement is sent quickly, it may not be possible to get the replacement. Periodicals have to be ordered at different times during the year and subscriptions renewed in time. Late payment of subscription may lead to non-availability of earlier issues or paying higher amounts for those issues. Current manual system is not able to meet these requirements. 1. Specify what should be the goals and sub-goals of an information system for ordering periodicals. 2. Quantify these goals. 3. Suggest alternative means of achieving the goals specified by you.

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Day 13 & 14	
1	Generation of Feasibility report,
2	**Exercise**: A library receives 1300 journals of varying periodicities. The journals received have to be recorded and displayed. Action has to be taken when journals are not received in time or lost in mail. Unless request for replacement is sent quickly, it may not be possible to get the replacement. Periodicals have to be ordered at different times during the year and subscriptions renewed in time. Late payment of subscription may lead to non-availability of earlier issues or paying higher amounts for those issues. Current manual system is not able to meet these requirements. 1. Specify what should be the goals and sub-goals of an information system for ordering periodicals. 2. Quantify these goals. 3. Suggest alternative means of achieving the goals specified by you.
3	System Requirement Specification,
4	**Exercise:** Prepare SRS for library management system
5	Deciding project goal, CASE tools.
6	**Essentials: What is CASE tool? Give example** **Prepare a SRS for User define projects**

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Day 15 & 16	
1	Practice exercise
2	**Exercise**: Prepare SRS for an "Inventory Management System" for a retail medical store. Also explain the Risk assessment and management in brief. Make necessary assumptions
3	**Exercise:** Prepare SRS for 'Airline Reservation System.' Make assumptions wherever necessary
4	**Exercise:** Prepare SRS for Leave management System.' Make assumptions wherever necessary
5	**Exercise:** Prepare SRS for E-commerce management system.' Make assumptions wherever necessary

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Day 17 & 18	
1	Introduction, Data flow diagram (DFD)
	Discussion: various mistakes found in drawing DFD with example. Describe the two main ways in which data-flow diagrams are used to manage the complexity of systems.
2	**Exercise:**
3	Introduction to Workflow diagram
4	**Exercise:** Construct workflow diagram for library management system.
5	Introduction to Mind map
6	**Exercise:** Develop mind map for library management system
	Essential: 1. Explain mind map with example. 2. Explain workflow diagram with example. **3.** What is DFD?

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Day 19 & 20	
1	DFD symbols, leveling of DFDs – leveling rules software tools to create DFDs
2	**Exercise:** Identify the Symbols and its use. Draw and label the external entities
3	Constructing a DFD, – logical and physical DFDs
4	**Exercise:** Context diagram for library management system.
5	Introduction to data dictionary.
7	**Exercise:**
	Essentials List: 1. What are the four advantages of using a data flow approach over narrative explanations of data movement? 2. What is the difference between logical DFD and physical DFD? 3. Explain a reasons for partitioning a DFD. 4. What is Data dictionary? How it is relate to DFD?
	Desirable: Account payable System: ➢ Account Payable cycle begins when a company purchase goods and any other service from outside vendors through a purchase order. ➢ The information of purchase order include following information ✓ How much quantity of product ✓ How much amount of bill are generated ➢ When goods are received then check it accuracy and accounting personnel then make a note in acceptation report. ➢ The suppliers send invoice at that time when goods are delivered then list of charges like TDS,VAT,TAXES and OTHER EXP. Are determined. This will note into purchase file. The suppliers are normally delivered well, products or services in receipt of purchase order. Purchase order shows goods order and that goods specified the payment are paid after the delivered of goods.

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Day 21 & 22	
1	Process specifications using Structured English
2	**Exercise**: Write structured English statement for University grading system. A University has a following rules for a student to qualify for a degree with Physics as the main subject and Mathematics as the subsidiary. 1. Marks should be 50% or more in Physics and 40% or more in Mathematics. 2. If marks in Physics are less than 50% then marks in Mathematics must be 50% or more. However, Physics marks must be at least 40% 3. If marks in Mathematics are less than 40% then marks in Physics must be 60% or more then only examination in Mathematics has to be repeated. In all other cases the student fails. Write the Structured English and draw Decision tree.
3	Process specifications using Decision Tables
4	**Exercise:** Construct decision tables for University grading system consider the above grading rules for a student to qualify for a degree.
5	Process specifications using Decision Tree
6	**Discussion:** Which process specification you are going to apply for complex combinations of conditions, actions, and rules. Which process specification is suitable for which situation?
7	**Exercise:** Construct decision tree for University grading system consider the above grading rules for a student to qualify for a degree.
8	**Essentials**: A Company makes three product which are codified as class A, Class B and class C. On class An items for purchase above Rs. 5000, 10% discount is given. For class class B for purchase above Rs.8000, a discount of 5% is given. On class C on a purchase of Rs. 10,000 and above 4% discount is given. Apply all process specification on it.
9	**Desirable: Page no . 240**

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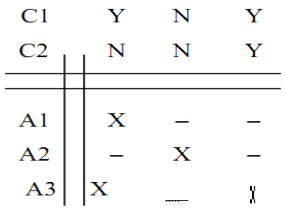
Day 23 & 24	
1	Revision on Decision table, Decision tree and Structured English formation
2	**Exercise:** Insurance company use a following rules to determine the eligibility of a driver for insurance Driver if following rules are satisfied 1. Drivers annual income > 20000 & is married male 2. Drivers annual income > 20000 & is married and over 30 3. Drivers annual income <= 20000 & she is married female 4. Driver is male over 30 5. Driver is married and age is not relevant Else do not insure Draw decision tree and table.
3	**Exercise:** Give the discount of 5% if customer pays advance or if the purchase is for Rs.10,000 or more and the customer is the regular customer otherwise no discount. draw a decision table and decision tree.
4	**Exercise:** A bank uses the following rules to classify new accounts If depositor's age is 21 or above and if the deposit is Rs 100 or more, classify the account type as A If the depositor is under 21 and the deposit is Rs 100 or more, classify it as type B If the depositor is 21 or over and deposit is below Rs 100 classify it as C If the depositor is under 21 and deposit is below Rs 100 do-not open account. draw a decision table and decision tree.
5	**Exercise:** A certain steel is graded according to the result of three tests given below- 1-Carbon Content<0.7 2-Rockwell Hardness>50 3-Tensile Strength>30,000kg/cm The steel is graded 10 if it passes all three tests, 9 if it passes only test 1 and 2, 8 if it passes only test 1, and 7 if it passes none of the test. Draw a decision table and decision tree.
6	**Exercise:** Study following conditions and draw a decision table and decision tree. 1. If product code=A And customer type=1 And the order amount<=700 Then 5% discount allowed 2. If product code=A And customer type=2 And the order amount<=700 Then 7.5% discount allowed 3. If product code=A And customer type=1 And the order amount>=700 Then 7.5% discount allowed

	4. If product code=A And customer type=2 And the order amount>700 Then 10% discount allowed 5. A flat discount of 5% on product code=B regardless of customer type and the order amount
	Essential List: 1. What is decision tree? Explain with example. 2. What is decision table? Explain with example. **3.** What is Structured english? Explain with example.
	Desirable list: Structured English: Draw proper Decision Tree and Write the Structured English for the given Decision Table. 

C1	Y	N	Y
C2	N	N	Y
A1	X	–	–
A2	–	X	–
A3	X		

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Day 25 & 26	
1	**Designing Effective Output**: Output Design Objectives, Factors to Consider When Choosing Output Technology,
2	Realizing How Output Bias Affects Users, Designing Output for Displays, Designing a Website
3	Designing Apps for Smartphones and Tablets
4	**Essential Assignment:** 1) List six objectives an analyst pursue in designing system output. 2) Compare different electronic output methods for users. 3) List four guidelines to facilitate the design of good display output. 4) List seven guidelines for creating good websites. 5) List two programs that can help you design output for a smartphone or tablet app.
5	**Desirable Assignment:** Design a dashboard for keeping track of a person's stock and portfolio. Think about how the dashboard could be used to make decision about buying and selling stock. Remember that a client can have more than one stock broker.

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Day 27 & 28	
1	Designing Effective Input: Good Form Design
2	**Exercise**: Design a form which collects information about medical history of patient
3	Good Display and Web Forms Design
4	**Exercise:** Design a web page to obtain credit card information for a web order. Partition the data onto two webpages for additional security.
5	Website Design
7	**Exercise:** Design and draw a representation of a display screen that can be used by sales clerks at a counter to try many shades of lipstick and makeup on a individual customer very quickly and with a high degree of accuracy. Input form customers should be their hair color, the color of a favorite clothing, and their typical environmental lighting.
8	**Essential Assignment:** **1)** List the four guidelines for good form design. **2)** What are the seven sections of a good form? Explain with example. **3)** List guidelines for good display design. How can it be simplified? **4)** What are dynamic web pages? **5)** List seven guidelines for a web-based fill-in-form.

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Day 29 & 30	
1	Designing User interfaces: Understanding Human–Computer Interaction, Usability Types of User Interface,
2	**Exercise:** Create an Interface for login that Is Easy to Learn and Use
3	Designing Interfaces for Smartphones And Tablets,
4	Guidelines for Dialog Design, Feedback for Users.
5	**Essential Assignment:** 1) What are the components of the term performance in the HCI context? 2) What are the five objectives for the designing user interfaces? 3) Explain what is meant by question and answer interfaces? To what kind of users are they suited? 4) What do alert do in a smartphone or tablet interface? 5) List four ways to notify a web user that input is not in the correct form? 6) When request is not completed, what feedback should be provided to the user?

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	Day 31 & 32
1	Demo of wireframe online tool for user interface designing.
2	Demo of dia open source software for DFD designing.
3	Essential Assignments: 1) Create user interface for Online shopping websites using wireframe online tool. 2) Create user interface for Library management system using wireframe online tool. 3) Create DFD for ATM system using dia 4) Create DFD for bank management system using dia.