

IFS 310: Information Systems Analysis

COURSE SYLLABUS¹

Spring Semester, 1998. Classroom: BEP327; Meeting Time: T R 305:420pm.

Prerequisites: Required: IFS 110, junior standing and declared IFS major. Preferred: IFS 302

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Consultation Hours: T R 1-3 pm and by appointment only.

COURSE OBJECTIVES: *The primary purpose of this course is to introduce students to methods, tools, and techniques for information systems analysis.* Students will be voluntarily divided into "system development teams" to work on a major project involving the analysis of a real business.

REQUIRED TEXTS/MATERIALS:

T. Eliason, A.L. Systems Development: Analysis, Design, and Implementation (Second Edition). HarperCollins Publishers, 1990.

L. LECTURE NOTES: For the convenience of students, a compilation of handouts and overheads for IFS 310: Information Systems Analysis is made available through the NKU bookstore.

CASE Tool: A Computer Aided Software Engineering tool (EasyCASE for Windows) is available in the COB computer lab and from the instructor.

Project Management tool: Microsoft Projects is available in the COB computer lab.

REFERENCES: The following books/articles are referenced in the lectures and are available to students from the NKU library (check reserve desk under IFS310/410) or from the instructor.

R1. "Cost Effectiveness: Articles on estimation of IS Project costs," from Couger, D.J., M. Colter and R.W. Knapp, *Advanced Systems Development/Feasibility Techniques*, Wiley, Inc., 1974.

R2. Powers, M. J., P. H. Cheney and G. Crow, *Structured Systems Development: Analysis, Design, and Implementation*, Boyd-Fraser Publ. Comp., 1990.

R3. Block, R., *The Politics of Projects*, Yourdon Press, 1983.

R4. Coad, P. and E. Yourdon, *Object-Oriented Analysis*, Prentice-Hall, 1990.

R5. Shlaer, S. and Mellor, S.J., *Object-Oriented Systems Analysis: Modeling the World in Data*, Yourdon Press, 1992.

R6: Teague, L. C. and C. W. Pidgeon, *Structured Analysis Methods For Computer Information Systems*, Macmillan Press Company, Inc., 1985.

EVALUATION: Grades will be determined on the basis of two exams, five assignments, and a major group project. General policies regarding the grading system in the NKU Undergraduate Catalog and the guidelines established in this syllabus will be followed. Individual **weights** for the various components of the course are as follows. Total points: 500. Exam I: 100; Exam II: 100; Five individual assignments: 150 (5 @ 30 points); and Analysis Project: 150 (Project report: 100 & Presentation: 50). For a ~~break-down of project grades~~ please refer to the attached report layout. Final project grades will be *scaled* depending upon **peer evaluations** by group members. These evaluations will be based on criteria provided by the instructor.

GENERAL GUIDELINES: To be eligible for a passing grade (D) in the class you must complete **all** course requirements including, in-class assignments, homework, final project, and exams by their respective deadlines and to the satisfaction of the instructor. *Students are fully responsible for learning the content of this course and for material disseminated in the class. You are not released from this responsibility because of absences. Class participation is essential to the educational goals and objective of this course. Therefore, the instructor may lower a student's final grade because of excessive absences.* Please adhere to deadlines. Students submitting late assignments will be penalized at the rate of 5% per day. **NO EXCEPTIONS WILL BE ALLOWED.** In case of exigencies, students are advised to inform the instructor at least a week before a due date. Plagiarism and/or cheating ("a student who uses a dishonest or deceitful means to obtain a grade is guilty of cheating; a student who submits another's work as one's own without

¹The syllabus is subject to change as announced in class.

adequate attribution is guilty plagiarism”) will be penalized with a failing grade per policy established in the *Student Handbook*.

IFS 310: Tentative Course Outline²

Notations.... T: Textbook; R: Reference books. CBM: Computer Book by Mail (Lecture notes). WI: World Interiors, Inc., Case. (Text); TMI: The Mansfield, Inc., example Case (Text).

<u>Date</u>	<u>Topic</u>	<u>Readings/Remarks</u>
Wk 1 (8/22)	An Overview of Systems Analysis	Handout, T(1), R2(1-2,10), R6
Wk 2 (8/29)	Systems Development Life Cycle Concept	Handout, T(1-3) & TMI; CBM
	Project Milestone: Group members due. Target company should be approached.	
Wk 3 (9/5)	Data Gathering Techniques	T(4) & TMI, Ass#1 due(9/5) , R2(8,9)
	Project Milestone: Fix target system. Obtain permission from client.	
** Last day to drop course without a grade is 9/10 **		
Wk 4 (9/12)	DFD Technique	T(3-4, pp. 66, 94) & TMI, R2(4-6)
Wk 5-8 (9/19,26, 10/3, 10/10)	DFD Modeling	T(3-4), R6, TMI, Ass#2 due(10/3)
	Project: Submit and obtain approval for techniques, time schedule, and sources.	
	Exam I (10/3)	
** Last day to drop course with a "W" is 10/15 **		
Wk 9 (10/17)	System Dictionary	T(5), TMI, Ass# 3 due (10/10)
Wk 10 (10/24)	Cost/Benefit Analysis	Handout, R1, T(p. 219-227)
	Project Milestone: Current Logical DFD due.	
Wk 10 (10/24)	Project Management	Handout, R3, T(p. 267-273),
	Project Milestone: Future Logical DFD due.	Ass#4 due (10/31)
Wk 11 (10/31)	Modern Approaches to Analysis	Handout, R4 & R5
	Project Milestone: System Dictionary due	
Wk 12 (11/7)	Automated Systems Development	T(21), R2(7), Ass#5 due 11/15)
Wk 13-14 (11/14, 21)	Project presentations ³ and Final exam review	
Wk 15 (12/5)	Project presentations (if needed), Exam II	

Assignments: The number and content of assignments may be changed during the semester. Grades for the assignments will be scaled as per weights in the syllabus. Assignments will be provided in class.

Ass#1: Systems theory & DFD questions.

Ass#2: DFD hands-on assignment.

Ass#3: Data Dictionary questions.

Ass#4: Data Dictionary hands-on assignment.

Ass#5: Entity and Transform Dictionary.

²Depending on need, some lecture time will be devoted for project consultation. Student groups must bring there project folder **regularly** to class along with any problems regarding the project or CASE tool for quick resolution.

³Final systems analysis project reports are due on the day of presentation. Presentations will be peer graded.

POLICY ON RESUBMITS

Students specifically allowed by the instructor to revise and/or resubmit assignments will be required to do so within one week from the date of receiving a grade for that assignment. Rework submitted after such a period will not be accepted. In order to be equitable to all students, a student submitting revised work will be able to improve their score by a maximum of one letter grade and never greater or equal to the highest score in the class for that assignment.

IFS 310: Information Systems Analysis

Spring Semester, 1998.

Dr. Deepak Khazanchi

Assignment#1: 30 points.

*Answer all questions. Please explain your reasoning **thoroughly**. For example, if you plan to discuss the impact of "technical competence" on "successful CIS" in question 1, begin with a definition of what you mean by these two phrases and then address the whole question. In addition to the text and lecture notes, supplement your answers by using library resources and databases (e.g., ABI INFORM, INFOTRAC; reserve desk has many books under 310/410). Always cite your sources in a bibliography as footnotes for each answer.*

- Q1. Technical competence (of the systems analyst) alone is sufficient for creating a successful computer information system. Do you agree or disagree? Why?
- Q2. What are some required skills for systems analyst? Discuss why each skill is needed. How do these skills reinforce each other?
- Q3. Textbook exercises 2-1, 2-4 (pp. 71-72) and, Case Assignment 1 & 2 (pp. 74).

IFS 310: Information Systems Analysis

Fall Semester, 1997.

Dr. Deepak Khazanchi

Assignment#2a: 15 points.

Answer all questions. Explicitly state your assumptions for each question. Follow the notions and rules established in lectures.

1. Case assignments 2 and 3 (pages 115-116 of the Eliason text).
2. Case assignments 1, 2, and 3 (page 157 of the Eliason text).

IFS 310: Information Systems Analysis

Fall Semester, 1997.

Dr. Deepak Khazanchi

Due Date: TBA

Assignment#2b (15 points): DFD Modeling

*VERY IMPORTANT: Answer all questions. **Do not forget** to use the modeling principles/rules and naming conventions discussed in class lectures.*

Read the Taxi Cab Company case and develop the Context and level 0 Data Flow Diagrams (DFD) for the business. Keep photocopies for your records. Submit original diagrams and other documentation (e.g., list of business functions).

IFS 310: Information Systems Analysis

Fall Semester, 1997.

Dr. Deepak Khazanchi

Due Date: TBA

Assignment#3 (30 points): DFD Modeling

*VERY IMPORTANT: Answer all questions. If you are not sure about a term to be defined, please be sure to look up Webster's (or other) dictionary. **Do not forget** to use the modeling principles/rules and naming conventions discussed in class lectures.*

Based on the previous assignment, decompose the level 0 DFD to show details at **level 1 and 2** of abstraction.

IFS 310: Information Systems Analysis

Fall Semester, 1997.

Dr. Deepak Khazanchi

Due Date: TBA

Assignment#4 (30 points):

SYSTEMS DICTIONARY: Data Dictionary portion

*VERY IMPORTANT: Answer all questions. For all data, transform, entity dictionary definitions use the **attributes** provided to you in class lectures. If you are not sure about a term's definition, please be sure to look up Webster's (or other) dictionary.*

Q1. Exercises 7-1, 7-2, 7-3, & 7-9, (p. 115-117); and 8-2 (p. 150) from text. (20 points)

Q2a. Identify which of the following are data elements and supply complete data element definitions for them using the attributes discussed in lectures (PS: If you decide that something is not a data element, provide a brief statement explaining your reasoning): (10 points).

- a. Marital-Status
- b. Primary-Color
- c. U.S.-Currency-Denomination
- d. Military-Time
- e. Latitude-And-Longitude

Q2b. Case Assignment 1 & 2 (page 197). (10 points)

Q3. Exercise 5-11 (page 195), Case Assignment 6 (Page 198). (10 points).

Q4. Having to maintain redundant information in a system model can compromise completeness, consistency and correctness. We can avoid maintenance difficulties caused by redundancy by recalling the purpose of the system modeling tools: (10 points).

- * The **routing** of data is depicted on the *DFD*.
- * The **composition** of data flows and data stores is described in the *data dictionary*.
- * The **rules** for transforming data are prescribed in the *transform dictionary*.
- * The **names** of producers and consumers of data are listed in the *origin/destination dictionary*.

Identify violations of the above guidelines that appear in Table I. Suggest how each violation may be remedied.

Table I: Some redundant notes in data dictionary entries.

<p>Data Element Name: Shift Range of Values:</p> <table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>7 am to 4 pm</td> </tr> <tr> <td>2</td> <td>4 pm to 11 pm</td> </tr> <tr> <td>3</td> <td>11 pm to 7 pm</td> </tr> </tbody> </table> <p>Notes: part of Work-Assignment.</p>	Value	Meaning	1	7 am to 4 pm	2	4 pm to 11 pm	3	11 pm to 7 pm
Value	Meaning							
1	7 am to 4 pm							
2	4 pm to 11 pm							
3	11 pm to 7 pm							
<p>Data Flow Name: Financial-Statement Composition: Financial-Statement = [Balance-Sheet Income-Statement]</p> <p>Notes: input from Origin: Accounting-Firm; output to Destination: Owners</p>								
<p>Data Element Name: Net-Pay Range of Values: \$0.00 to \$999.99</p> <p>Notes: calculates as: Net-Pay = Gross-Pay - Taxes - Other-Deductions.</p>								

IFS 310: Information Systems Analysis

Spring Semester, 1998.

Dr. Deepak Khazanchi

Due Date: 4/7

Assignment#5 (30 points):

SYSTEMS DICTIONARY: Transform and Entity Dictionary

- Q1. The following narrative describes what must be done to **produce monthly account statements**. Using **Structured English**, express the procedure for preparing a group of these statements. (Please note: You must use Structured English vocabulary. For example, it would be best to review your lecture notes and especially the Structured English example provided in the notes for the transform Determine Order Quantity. No resubmits will be allowed on this assignment). [20 points].

Our bank sends a statement each month to each customer with a personal checking account unless there is not activity in the account. Personal checking accounts are divided into different groups based on the customer's last name so that we don't have to send out all the statements at the end of the month. This spreads out the workload.

To produce a customer account statement we must show the account balance as of the date of the last statement and the balance as of the end of the period covered by the statement. We must also list each deposit and each withdrawal or debit (such as charges for printing checks or fees for bounced checks). We also compute and subtract the service charges as follows: Special checking accounts have a service charge of 25 cents per check. Regular checking accounts have no service charge if the minimum balance during the month was \$500 or more or the average balance was \$1000 or more; otherwise the service charge is \$2 plus 18 cents per check.

- Q2. Pick two entities from the taxicab company DFD model and complete an entry for the TCC origin/destination dictionary. [10 points].

IFS 310: Information Systems Analysis

Dr. Deepak Khazanchi

OUTLINE/ORGANIZATION FOR THE SYSTEMS ANALYSIS REPORT: SYSTEMS SPECIFICATIONS

1. Executive Summary ... (5)
2. Introduction ... (5)
 - Company Background
 - Mission (of project) Statement
3. Fact Gathering ... (5)
 - Sources
 - Techniques Used
 - Schedule
4. System Description ... (65)
 - a. Current Logical System ... [25]
 - DFD (for the Current System)
 - Definition and Description of Functions in the current system
(Include a detailed factoring of the transforms with their level of abstraction).
 - Problem Statement (describe problem areas and provide a rationale)
 - b. Future Logical System ... [20]
 - Domain of Change
 - Boundary of Change
 - Interface between the domain of change and the rest of the system (i.e., a description of all data flows into and out of the domain of change.
 - DFD (for the New System)
 - Definition and Description of Functions in the New System
 - Scope of Automation (Man-machine Boundary)
 - c. System Dictionary ... [20]
 - Data Element Section
 - Data Structure Section
 - Data Flow Section
 - Data Store Section
 - Origin/Destination Dictionary Section
 - Transform Dictionary Section
5. Summary and Recommendations ... (5)

Appendix: Include all diagrams here.

GRADING OF THE REPORT:

Grading of report will be based on two major aspects:

1. Overall organization of the report (15%); and
2. Content of the report ... (85%). Detailed break-up in (%) is shown above.

VERY IMPORTANT: *The final project grade will be **scaled** as per the weights described in the syllabus. Contribution of each team member to the analysis effort will be assessed by all team members and the final project grade will be assigned on that basis.*

PROJECT PRESENTATION: Groups will make presentations of their systems analysis. Class presentations are worth 50 points. Presentations will be *peer graded* by the whole class.