# *Course information*

# Systems Analysis IT

## 16B51C504 (Study Period 1, 2020)

**Course Coordinator: Faisal Syafar**

**JURUSAN PENDIDIKAN TEKNIK ELEKTRONIKA
DAN TEKNOLOGI INFORMASI
FAKULTAS TEKNIK, UNIVERSITAS NEGERI MAKASSAR**

**CONTENTS**

This *Course information* needs to be read in conjunction with *Extra course information* available at:

https://faisalsyafar.wixsite.com/myweb/teaching/ITSystemAnalysis


## 1. INTRODUCTION

Welcome to 16B51C504, Systems Analysis IT. Systems Analysis is course that examines how computerized information systems are acquired and implemented in organizations. Systems Analysis is both 'technical' and less technical central focus of systems analysis is on the requirements of the users of these information systems. Systems design takes the 'output' of systems analysis and implements a 'technical' solution in the form of hardware, software and communications technology.

Since the inception of computerized information systems there has been numerous approaches to systems development and in this course we concentrate on the most current of these, the object-oriented approach. Using this approach we look at how we can specify users' requirements through the use of a number of models. However, as there are still many systems in practical everyday use that were developed using different approaches (sometimes called 'legacy' systems) we also briefly review these older alternative approaches (although many companies still use some of these older approaches as well). We also examine alternative methods of achieving users' requirements (instead of the organization 'building' a new system itself) through the means of, for example, the purchase of packaged software, the use of application service providers, and the partial or complete outsourcing of systems development.

We have endeavored to make the course as interesting, challenging and thought- provoking as possible.

We look forward to working with you throughout the study period.

*Faisal Syafar*

**Course Coordinator**

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**Course Coordinator homepage:**

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**CONTACT DETAILS**

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## TEACHING TEAM

## COURSE COORDINATOR, LECTURER

Faisal Syafar

Ridwansyah

Muh. Ma'ruf

## 2. COURSE OVERVIEW

**COURSE STATEMENT**

Introduction to systems development and acquisition. Feasibility studies and systems analysis in the context of systems development and acquisition. The role of the systems analyst in feasibility studies, requirements determination, acceptance testing, installation and training. Information gathering, modelling and analysis techniques. Information sources. Make versus buy. Internal verification and external validation issues and techniques. Object oriented requirements specification. Alternative modelling and specification paradigms. Interfaces between the systems analyst and: the organisation, primary systems users, systems designers and systems suppliers. The implications of IT outsourcing on communication across these interfaces.

**LEARNING OBJECTIVES AND GRADUATE QUALITIES**

On completion of this course, the student should be able to:

- Describe the key characteristics of IS/IT Development/Acquisition processes appropriate to a range of contexts in which the process might take place

- Identify and specify ICT-underpinned interventions in organisational, governmental and societal pervasive contexts.

- Describe the activities and intellectual tools associated with the role of Systems Analyst within IS/IT development/acquisition, and in particular

  o information elicitation
  o information modelling and analysis
  o evaluation of alternative intervention strategies
  o requirements specification
  o internal verification of requirements
  o external validation, with problem owners, of requirements
  o the development of acceptance criteria

- Analyse a problematic or opportunity-rich situation in an organisational, governmental or social setting and represent requirements for an appropriate ICT system

- Describe a range of alternative (non-OO) modelling/specification paradigms

Engage in student-centred learning through the use of the web to assemble information and tools required to complete assignments. The

proportion of PTA-UNM Graduate Qualities applied to assessment in this course is given with the description of each assessment item.

**PREREQUISITE(S)/ ASSUMED KNOWLEDGE**

It is assumed that students have access to Microsoft Visio 2003 Professional or the newest (further details to be provided), email facilities and the Internet, either through on-campus facilities or off-campus personal arrangement. Students should have also successfully completed Fundamentals of ICT, Computer Organization and Architecture and Computer Programming (Advanced).

**TEACHING AND LEARNING ARRANGEMENTS**

This course is taught through:

- Lectures, (13 x 2 hours) to provide a forum for explaining the primary content. All lecture notes will be available online for both internal and external students.

- Tutorials, (12 x 1 hour) to reinforce the lecture material. All tutorial material will be made available online.

- Discussion Board, to allow students and staff to debate issues related to the course.

**UNIT VALUE OF COURSE**

3 credit units

**SPECIAL REQUIREMENTS**

To obtain a passing grade in this course, students must achieve at least 40% in the Final exam.

# 3. LEARNING RESOURCES

**TEXT(S)**

You will need **continual** access to the following text(s) in order to complete this course. The library will hold one copy of the nominated text book(s) and therefore you will need to acquire the book(s).

Stumpf, R.V. & Teague, L.C. (2005), *Object-Oriented Systems Analysis and Design with UML*, New Jersey: Prentice Hall

**MATERIALS TO BE ACCESSED ONLINE Course homepage**

https://faisalsyafar.wixsite.com/myweb

Click the link **Study Period I 2020 (Semester Ganjil)** under the heading *Teaching* to reach the teaching resources for IT Systems Analysis. Materials and other resources accessible from this webpage will progressively include:

Announcements Course information booklet Staff information Lecture and tutorial content Discussion room(s) Assignments Results Exam information and sample exam questions.

Please ensure that you log on to the web site **at least** a couple of times per week to check for new announcements, course material, or to participate in the discussion pages. It is YOUR responsibility to check this web site often.

This course is about technology and, accordingly, we use this very same technology to disseminate course material to students. There is limited printed course material given out to students – this applies to external students as well as internal students.

**COURSE COMMUNICATION**

Please post all questions with the exception of personal questions to the Internals discussion room.

If you wish to send a personal query, please use the course email address.

**COURSE EMAIL ADDRESS**

Students should use the following email address:

Faisal.syafar@unm.ac.id

## OTHER Course RESOURCES

### References

The following books are indicative of other reading and references on the discipline of systems analysis, and particularly the object-oriented approach to systems analysis and design. Not all of these books may be available in the University library and there may, in some cases, be more recent editions of these texts (in which case the more recent edition is usually preferable). You are definitely encouraged to read more widely than the set textbook.

- *Ambler, S.W., (1998), Building Object Applications That Work.*
- Arlow, J. & Neustadt , I., (2002), *UML and the Unified Process*.
- Avison, D.E. & Fitzgerald, G., (1995), *Information Systems Development: Methodologies, Techniques and Tools (2e)*
- Bahrami, A. (1999), *Object Oriented Systems Development.*
- Bennett, S., McRobb, S. & Farmer, R. (1999), *Object Oriented Systems Analysis and  Design using UML.*
- *Booch, G., Rumbaugh, J. & Jacobson, I. (1999), The Unified Modelling Language User  Guide.*
- *Burch,J.G., (1992), Systems Analysis, Design, and Implementation, Boyd & Fraser  Publishing Company, Boston, USA.*
- *Dennis, A. and Haley Wixom, B., (2000), Systems Analysis and Design. An Applied  Approach, John Wiley and Sons, New York, USA.*
- *Dennis, A.,Haley Wixom, B. and Tegarden, D.,(2005), Systems Analysis and Design. An  Object-Oriented Approach with UML Version 2 (2nd Ed.), John Wiley and Sons, New  York, USA.*
- *Eliens, A., (2000), Principles of Object Oriented Software Development (2e).*
- Fowler, M. & Scott, K. (2000), *UML Distilled (2e). A Brief Guide to the Standard Object  Modeling Language*.
- *George, J. F., Batra, D., Valacich, J. S. & Hoffer, J.A. (2004) Object-Oriented Systems  Analysis and Design, New Jersey: Prentice Hall.*
- Graham, I, (2001), *Object Oriented Methods: Principles & Practice (3e).*
- Hawryszkiewcz, I. (*2001), Introduction to Systems Analysis and Design (5th ed),* Prentice-Hall*: Sydney.*
- Hoffer,J.A., George, J.F. and Valacich,J.S., *(2002), Modern Systems Analysis & Design  (3rd ed), Addison-Wesley, Mass., USA.*
- *Hunt, J., (2000), The Unified Process for Practitioners. Object-Oriented*

- *Design, UML and Java.*
- Jezequel, J., Train, M. & Mingins, C., (2000), *Design Patterns and Contracts.*
- Kendall, K.E. and Kendall, J.E., *(2002), Systems Analysis and Design (5th ed), Prentice- Hall, New Jersey, USA.*
- Larman, C. (1998), *Applying UML and Patterns. An Introduction to Object-Oriented Analysis and Design.*
- Maciaszek, L.A. (2005) Requirements *Analysis and Systems Design (2nd Ed.)* Essex:  Addison Wesley.
- McCleod(Jr.),R and Jordan, E., *(2002), Systems Development. A Project Management  Approach, John Wiley and Sons, New York, USA.*
- *Oestrich, B., (1999), Developing Software with UML: Object Oriented Analysis & Design  in Practice.*
- Page-Jones, M. (2000), *Fundamentals of Object-Oriented Design in UML.*
- *Pressman, R.S., (2001), Software Engineering, A Practitioner's Approach (5e).*
- *Richter, C, (1999), Designing Flexible Object-Oriented Systems with UML.*
- *Satzinger, J.W., Jackson, R.B. & Burd, S.D. (2004) Systems Analysis and Design in a Changing World (3rd Ed.), Boston: Course Technology.*
- *Satzinger, J.W., Jackson, R.B. & Burd, S.D. (2005) Object-Oriented Analysis and  Design with the Unified Process, Boston: Course Technology.*
- *Schach, S.R., (2002), Object–Oriented and Classical Software Engineering (5e).*
- Shelley, G.B., Cashman, T.J. & Rosenblatt, H.J. (2006) *Systems Analysis and Design  (6th Ed.)* Boston: Course Technology.
- Wainwright Martin, E., Brown, C., DeHayes, D.W., Hoffer, J.A. & Perkins, W.C. *(2005)  Managing Information Technology (5th Ed*.) New Jersey: Prentice Hall.

# 4. ASSESSMENT

**ASSESSMENT SUMMARY**

| Form of assessment | Weighting | Due date | Graduate Quality/Qualities being assessed |
|---|---|---|---|
| Continuous tutorial assessment | 10% | Ongoing | 1, 2, 3, 4, 6 |
| Assignment 1 | 10% (individual) | Wednesday 5pm Week 7 | 1, 2, 3, 4, 6 |
| Assignment 2 | 10% (Groups) | Wednesday 5pm Week 13 | 1, 2, 3, 4, 6 |
| Examination | Mid 30% | Mid Exam period | 1, 2, 3, 4, 5, 6, 7 |
| | Final 40% | Final Exam period | 1, 2, 3, 4, 5, 6, 7 |

Please make sure you carefully read the assessment policy available on the course website.

The final grade for the course will be determined using the assessment pieces and weightings listed above. To obtain a passing grade in this course, students must achieve at least 40% in the examinations.

Note that the final mark (calculated using all components of the assessment) may be scaled (up or down) before a final grade is awarded in this course. This is done to ensure consistent standards are maintained.

You will be notified during the study period if there are any changes to the assessment criteria.

**ASSESSMENT DETAILS**

Details of assignment submission and return are listed under each assessment task. Assignments will be returned to you within two to three weeks of submission.

Re-submission of assignments is not available in this course.

All assignments must be submitted electronically and in hard copy.

**Extensions**

Extensions for assignments are available under the following conditions:

• Medical (with official doctor certificate)

• Compassionate grounds

• Permanent or temporary disability (ENTEXT card or other documentary evidence must be presented to the Course Coordinator)

Note: Equipment failure, loss of data, or 'Heavy work commitments' are not sufficient grounds for an extension. However, you may apply for an extension based on unexpected work commitments. In this case, you will need to attach a letter from your supervisor with your application. Late assignments will not be accepted unless a medical certificate (or appropriate supporting evidence) is presented to the Course Coordinator. The certificate must be produced as soon as possible and must cover the dates during which the assignment was to be attempted. In the case where you have a medical certificate, the due date will be extended by the number of days stated on the certificate, up to seven days.

**Occasionally assignments go missing during submission and return. It is expected that students will make copies of all assignments and be able to provide these if required.**

Students are reminded that they should be aware of the academic misconduct. guidelines available from the University of South Australia website. Deliberate academic misconduct such as plagiarism is subject to penalties.

**Assessment Policy**

The following are assessment policies, which are common across the universities:

**Deferred Assessment and Special Consideration**

In the case of deferred assessment or special consideration the student must apply at the course coordinator.

• A **deferred assessment** applies to the **final assessment item** for the

course. It is granted on the basis of medical, compassionate or religious observance grounds.

- A student may apply for **special consideration** on the basis of medical, compassionate or religious observance grounds if the student believes that illness; disability through accident or other special circumstances significantly affected his or her performance in the final assessment item.

Note that special consideration will only be given to students in very exceptional circumstances.

**Supplementary Assessment, Conceded Pass & Terminating Pass**

Students cannot apply for a supplementary assessment, conceded pass or terminating pass. These are determined by Program Directors during the academic review process at the end of each study period. All students who are awarded a conceded pass or terminating pass will be notified immediately after the academic review.

- **Supplementary assessment** is not available in this course.

# ASSESSMENTS Continuous Tutorial Assessment

Tutorials provide the opportunity for discussion of topics in smaller groups.

Tutorials are assessed on attendance, preparation and in-class participation (which may include both individual and group participation).

Tutorial exercises will be provided on the course web site for downloading.

Active preparation and participation in tutorials aids in the development of all the graduate qualities.

Tutorial participation develops:

- Body of knowledge through engagement with weekly exercises.
- Lifelong learning through sourcing and provision of solutions.
- Effective problem solving through solving problems.
- Work along and in teams through having sole responsibility for provision of solutions.
- Communicates effectively through the provision of solutions.
- Students are expected to prepare answers for all of the tutorial questions

prior to every tutorial class. At five points of time during the study period (see schedule at the end of this booklet), you will be required to submit answers to a particular question or set of questions to that week's tutorial for marking. Further details will be provided in each of the assessable tutorials. All submissions must be made to your tutor prior to the commencement of the tutorial session. There will be a maximum of 5 marks given for demonstrable, written, constructive and knowledgeable preparation of each tutorial submission. A maximum of 25 marks are achievable for this component. All submissions must use the *Assignment cover sheet* (available from your Course homepage and in myUniSA). A maximum of 5 marks (in any given tutorial) will also be given for constructive and knowledgeable participation. Participation is required in at least five tutorial sessions. A maximum of 25 marks are achievable for this component. Hint: The more you participate, the more likely you are of achieving maximum marks!!!! Your efforts will be recorded during the tutorial classes. If you are unable to attend a tutorial because of sickness, advise your tutor and the course email address by email beforehand and this will be taken into consideration in your mark.

## Assignment 1

Assignment details will be available on the Course Website. The Graduate Qualities being assessed by this assignment are:

• operates effectively with and upon a body of knowledge of sufficient depth to begin professional practice

• is prepared for life-long learning in pursuit of personal development and excellence in professional practice

• is an effective problem solver, capable of applying logical, critical, and creative thinking to a range of problems

• can work both autonomously and collaboratively as a professional

• communicates effectively in professional practice and as a member of the community

The assignment should be submitted via email or online.

Assignments will be returned to you within two to three weeks of submission.

## Assignment 2

Assignment details will be available on the Course Website. The Graduate Qualities being assessed by this assignment are:

1. operates effectively with and upon a body of knowledge of sufficient depth to begin professional practice
2. is prepared for life-long learning in pursuit of personal development and excellence in professional practice
3. is an effective problem solver, capable of applying logical, critical, and creative thinking to a range of problems
4. can work both autonomously and collaboratively as a professional
5. communicates effectively in professional practice and as a member of the community

The assignment should be submitted via email or online.

Assignments will be returned to you within two to three weeks of submission.

## Assessment grades

Grades corresponding to marks are as follows:

| Grade | Notation | Notational % |
|---|---|---|
| High distinction | A | 86-100 |
| Distinction | B | 76-85 |
| Credit | C | 61-75 |
| Pass level 1 | D | 56-60 |
| Fail | E | Below 55 |

## Assignment Assessment Criteria

Assessment of your assignments will take into account a number of criteria. The following criteria are indicative of the range and type of criteria that may be applied. The list is not meant to be necessarily exhaustive.

1. Accuracy of the UML models created and the degree to which they provide all the required components such as classes, objects, and so forth.
2. Relevance of your answer to the question or task set.
3. The extent to which assignment questions are answered fully.
4. Clarity of written expression.
5. Supporting documentation for arguments and the use of case studies to illustrate your understanding of the relevant concepts.
6. Proper use of referencing—that is, appropriate acknowledgment of the work of other authors and use of a bibliographic convention.
7. Critical analysis capabilities where applicable and the capabilities to suggest problems, pitfalls, limitations, potentially productive future new directions, practical application of concepts, and the like.
8. Logical planning and sequence.
9. Use of inclusive language.
10. Overall presentation, including correct grammar, spelling and punctuation.
11. Comprehensive coverage reflecting engagement with set readings, text(s) and other relevant materials.


## Exam/Test

Both the MID test and FINAL exam will assess all material presented during the study period (lecture material, assignment, tutorial work, etc), unless otherwise specified.

The duration of the exam will be 10 minutes reading time followed by 90 minutes exam time.

The standards by which the exam will be assessed are:

• Answers must be clearly expressed and relevant to the question.

• Answers must be readable.

• Answers that have been crossed out will not be marked.

- To obtain a passing grade in this course, students must achieve at least 40% in the exam. The examination is 'open-book' only to the extent that students are permitted to take hand-written notes into the examination (maximum of 10 A4 single sided pages), but no other material including word-processed notes, textbooks, or calculators. These items must not be enhanced or tampered with in any way.

## Students with disabilities

Students with disabilities may be entitled to a variation or modification to standard assessment arrangements.

### VARIATIONS TO ASSESSMENT TASKS

Students may request a variance to assessment methods, tasks and timelines based on medical, compassionate or religious observance grounds, or community services. Such variations must be requested within the first two weeks of the course (or equivalent for accelerated or intensive teaching). Alternative arrangements due to unexpected circumstances should be discussed with the Course Coordinator as required.

## ACADEMIC INTEGRITY

The study program of PTA is committed to academic integrity and has policies and procedures in place to ensure academic integrity and manage academic misconduct for all students.

Academic misconduct includes:

• Plagiarism

• Breaches of the examination procedures.

• Inclusion of material in individual work that has involved significant assistance from another person, where such assistance is not expressly permitted in this booklet.

• Falsification or misrepresentation of academic records.

Other actions that contravene the principles of academic integrity. Students' work may be checked for plagiarism using a variety of means, including text comparison software. Assignments checked electronically will be held in a database for future matching processes.

## EVALUATION OF THE COURSE

We are committed to ensuring continual improvement of this course. During the study period, please feel free to send feedback to staff via the discussion boards or the Course email account (will be provided at course coordinator's website) Please let us know of any errors in lecture slides, tutorials, solutions, etc. At the end of the study period, online questionnaires will be available for you to evaluate the course and the teaching staff. Your feedback is extremely valuable and your comments remain anonymous. You are required to log on to the system to maintain its integrity (so that only students actually enrolled in a class can evaluate it, and so that each person can only complete a questionnaire once), but your identity is not associated with your responses.

This feedback is read and used to improve the course and the skills of the teaching staff.

Results of past feedback have been incorporated into the course in changes such as:

• Revising the amount of assessable tutorial materials to be submitted.

• Providing more practical examples during lectures.

# 5. COURSE CALENDAR

**STUDY PERIOD 1, 2020**

The following lecture and tutorial schedule is a guide only. You will be notified during the study period if there are any changes to the schedule.

| Week | Dates | Topic | Tutorial | Assessment |
|------|-------|-------|----------|------------|
| 1 | 23 August | Introduction to This Course, Introduction to Systems Development | No tutorial | |
| 2 | 30 August | Methodologies, Modelling, IS Analysis and Design | Introduction to Systems Development | |
| 3 | 6 Sept | Project Management | Methodologies, Modelling, IS Analysis and Design | |
| 4 | 13 Sept | Selecting and Planning Projects, Feasibility | Project Management | Tute Questions Wk 4 |
| 5 | 20 Sept | Determining O-O Systems Requirements | Selecting and Planning Projects, Feasibility | |
| 6 | 27 Sept | Introduction to O-O Approach, IT Event Analysis | Determining O-O Systems Requirements | Tute Questions Wk 6 |
| 7 | 4 Oct | IT Event Analysis (contd) | | |
| | *11 Oct* | *Mid Test* | | |
| 8 | 18 Oct | Use Cases | Introduction to O-O Approach, Business Event Analysis | Assignment 1 Due |
| 9 | 25 Oct | Sequence and Activity Diagrams | Use Cases | Tute Questions Wk 8 |
| 10 | 1 Nov | Domain Model: Part 1, Statecharts | Sequence and Activity Diagrams | Tute Questions Wk 9 |
| 11 | 8 Nov | Domain Model: Part 2, System Operation Contracts | Domain Model, Statecharts | |
| 12 | 15 Nov | Alternative Requirements Modelling Methods | Domain Model, System Operation Contracts | Tute Questions Wk 11 |
| 13 | 22 Nov | Alternatives to Custom Development, Systems Evaluation | Alternative Requirements Modelling Methods | |
| 14 | 29 Nov | Revision | Alternatives to Custom Development, Systems Evaluation | Assignment 2 Due |
| | *6-13 December* | *Final Test* | | |