

## **IT4204 - Information Technology Project Management (Compulsory)**

### **INTRODUCTION**

Information Technology Project Management (ITPM) is one of the compulsory courses in Semester 4. A knowledge of the concepts, theories, methodologies and techniques of software project management as well as related skills could be gained from the successful completion of this course.

**CREDITS: 04**

### **LEARNING OUTCOMES**

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

- Demonstrate knowledge of project management concepts, methodologies and techniques
- Actively participate as a manager or member of an Information Technology Project

### **MINOR MODIFICATIONS**

When minor modifications are made to this syllabus, those will be reflected in the Virtual Learning Environment (VLE) and the latest version can be downloaded from the relevant course page of VLE. Please inform your suggestions and comments through the VLE.

<http://vle.bit.lk>

### **ONLINE LEARNING MATERIALS AND ACTIVITIES**

You can access all learning materials and this syllabus in the VLE: <http://vle.bit.lk>, if you are a registered student of BIT degree program. It is very important to participate in learning activities given in the VLE to learn this subject.

### **ONLINE ASSIGNMENTS**

The assignments consist of two quizzes, assignment quiz 1 (It covers the first half of the syllabus) and assignment quiz 2 (It covers the second half of the syllabus). Maximum mark for a question is 10, minimum mark for a question is 0 (irrespective of negative scores).

Final mark is calculated considering 40% of assignment quiz 1 and 60% of assignment quiz 2. Pass mark for the online assignments in a course is 50. You are advised to do online assignments before the final exam of the course. It is compulsory to pass all online assignments to partially qualify to obtain year 2 certificate.

**FINAL EXAMINATION**

Final exam of the course will be held at the end of the semester.

Examination Paper will consist of two parts.

- Part 1 : 1 Hour paper consisting of Multiple Choice Questions
- Part 2 : 1 Hour paper consisting of Structured Questions

**OUTLINE OF SYLLABUS**

Topic	Hours
1- Introduction to Project Management	05
2-Information Technology Context and Process Groups in Project Management	06
3-Project Integration Management	08
4-Project Scope Management	05
5-Project Time Management	07
6-Project Cost Management	06
7-Project Quality Management	06
8-Project Human Resource Management	05
9-Project Communications Management	04
10-Project Risk Management	05
11-Project Procurement Management	03
<b>Total</b>	<b>60</b>

**REQUIRED MATERIALS****Main Reading**

**Ref 1:** “Information Technology Project Management” Kathy Schwalbe,  
Fourth Edition, THOMSON Course Technology, 2007 (ISBN 81-315-0123-X).

**Supplementary Reading**

**Ref 2:** “Software Project Management” Bob Hughes and Mike Cotterell, Fourth  
Edition, Tata McGraw-Hill

**Ref 3:** [http://en.wikipedia.org/wiki/List\\_of\\_project\\_management\\_software](http://en.wikipedia.org/wiki/List_of_project_management_software)

**Ref 4:**

<http://www.niwotridge.com/PDFs/PM%20Chapter%20%28short%20no%20email%20%20Update%202.pdf>

**DETAILED SYLLABUS:****Section 1: Introduction to Project Management (05 hrs)****Instructional Objectives:**

- Explain what a project is, provide examples of information technology projects, list various attributes of projects, and describe the triple constraint of projects
- Describe project management and discuss key elements of the project management framework, including project stakeholders, the project management knowledge areas, common tools and techniques, and project success factors
- Describe the role of the project manager by describing what project managers do, and the skills they need
- Describe the importance of ethics in project management
- Identify different project management software
- State challenges and trends in IT Project Management

**Material /Sub Topics****1.1 What is a Project [Ref 1: pg. 4]**

- 1.1.1 Advantages of project management [Ref 1: pg. 4]
- 1.1.2 Examples of information technology projects [Ref 1: pg. 5]
- 1.1.3 Project attributes [Ref 1: pg. 5 - 6]
- 1.1.4 The triple constraint [Ref 1: pg. 7]

**1.2 What is Project Management? [Ref 1: pg. 9]**

- 1.2.1 Project stakeholders [Ref 1: pg. 10 - 11]
- 1.2.2 Project management knowledge areas [Ref 1:pg.11-12]
- 1.2.3 Project management tools and techniques [Ref1: pg.12-13]
- 1.2.4 Project success factors [Ref 1: pg. 14 - 15]

**1.3 The Role of the Project Manager [Ref 1: pg. 16]**

- 1.3.1 Job description [Ref 1: pg. 16 - 17]
- 1.3.2 Skills for project manager [Ref 1:pg. 17 - 22]
- 1.3.3 Project management profession [Ref 1: pg 24]
- 1.3.4 The Project Management Institute [Ref 1: pg 28-30]

**1.4 Ethics in Project Management [Ref 1: pg. 30 - 31]****1.5 Project Management Software [Ref 1: pg. 31 - 32] [Ref 3]****1.6 New Trends in IT Project Management [Ref 4]****1.6.1 Heavy weight and lightweight software processes [Ref 4]****1.6.2 Managing agile IT projects [Ref 4]****Section 2 : Information Technology Context and Process Groups in Project Management (06 hrs)****Instructional Objectives:**

- Describe the systems view of project management and how it applies to information technology projects
- Explain why stakeholder management and top management commitment are critical for a project's success
- Describe the concept of a project phase and the project life cycle
- Discuss the unique attributes and diverse nature of information technology projects
- Describe the five project management (PM) process groups
- Describe how the PM process groups relate to the PM knowledge areas

**2.1 A Systems View of Project Management [Ref 1: pg. 40]****2.1.1 What is a systems approach? [Ref 1: pg: 40]****2.1.2 The three-sphere model for systems management [Ref 1:pg.41 - 42]****2.1.3 Stakeholder management [Ref 1: pg. 49 - 50]****2.1.4 The importance of top management commitment [Ref 1: pg. 51]****2.1.5 The need for organizational commitment to information technology [Ref 1: pg. 52]****2.1.6 The need for organizational standards [Ref 1: pg. 53]****2.2 Project Phases and the Project Life Cycle[Ref 1: pg. 53 - 56, Ref 1: pg. 59 - 60]**

## 2.3 The Context of Information Technology Projects [Ref 1: pg. 61]

2.3.1 The nature of information technology projects  
[Ref 1: pg. 61 - 62]

2.3.2 Characteristics of information technology project team members  
[Ref 1: pg. 62]

2.3.3 Diverse technologies [Ref 1: pg. 63]

## 2.4 Project Management Process Groups [Ref 1: pg. 71 - 75]

2.5 Mapping the Process Groups to the Knowledge Areas  
[Ref 1: pg. 76 -- 77]

# Section 3 : Project Integration Management (08 hrs)

## Instructional Objectives:

- Describe what project integration management is and outline its main processes
- Explain the strategic planning process and apply different project selection methods
- Explain the importance of creating a project charter to formally initiate projects
- Discuss the process of creating a preliminary project scope statement
- Describe project management plan development and its content
- Explain project execution
- Describe the process of monitoring and controlling project work
- Describe the integrated change control process and planning for and managing changes on information technology project
- Explain the importance of developing good procedures for closing projects

## Material /Sub Topics

3.1 What is Project Integration Management? [Ref 1: pg. 116 - 119]

3.2 Strategic Planning and Project Selection [Ref 1: pg. 119]

3.2.1 Identifying potential projects [Ref 1: pg. 119 - 120]

3.2.2 Methods for Selecting Projects [Ref 1: pg. 122 ]

- 3.2.2.1 Focusing on broad organizational needs  
[Ref 1: pg. 122]
- 3.2.2.2 Categorizing information technology projects  
[Ref 1: pg. 123]
- 3.2.2.3 Performing Net Present Value Analysis, Return on  
Investment and Payback Analysis[Ref 1: pg. 124 - 130]
- 3.3 Project Charters [Ref 1: pg. 133 - 137]
- 3.4 Preliminary Scope Statement [Ref 1: pg. 137]
- 3.5 Project Management Plans [Ref 1: pg. 138 - 142]
- 3.6 Project Execution [Ref 1: pg. 145]
- 3.7 Monitoring and Controlling Project Work [Ref 1: pg. 150]
- 3.8 Integrated Change Control [Ref 1: pg. 151 - 153]
- 3.9 Closing Projects [Ref 1: pg. 156]

#### **Section 4 : Project Scope Management (05 hrs)**

##### **Instructional Objectives:**

- Describe the main processes in the project scope management
- Explain the scope planning process and describe the contents of a scope management plan
- Discuss the scope definition process and work involved in constructing a work breakdown structure
- Explain the importance of scope verification and how it relates to scope definition and control
- Describe the importance of scope control and approaches for preventing scope-related problems on information technology projects

##### **Material /Sub Topics**

- 4.1 What is Project Scope Management? [Ref 1: pg. 168 – 170]
- 4.2 Scope Definition and the Project Scope Statement [Ref 1: pg. 172 - 174]
- 4.3 Creating the Work Breakdown Structure [Ref 1: pg. 175 - 182]
- 4.4 Scope Verification [Ref 1: pg. 187 - 188]

#### 4.5 Scope Control [Ref 1: pg. 188 - 189]

##### 4.5.1 How to improve user input [Ref 1: pg. 189 - 190]

##### 4.5.2 Suggestions for reducing incomplete and changing requirements [Ref 1: pg. 190 – 192]

### **Section 5 : Project Time Management (07 hrs)**

#### **Instructional Objectives:**

- State the importance of project schedules and good project time management
- Define activities as the basis for developing project schedules
- Use network diagrams and dependencies to assist in activity sequencing
- Identify the relationship between estimating resources and project schedules
- Explain how various tools and techniques help project managers to perform activity duration estimating
- Use a Gantt chart for planning and tracking schedule information.
- Find the critical path for a project
- Use the Program Evaluation and Review Technique (PERT) as project time management technique.

#### **Material /Sub Topics**

##### 5.1 Importance of Project Schedules and Time Management [Ref 1: pg 201 – 204]

##### 5.2 Activity Definition [Ref 1: pg 204 – 206]

##### 5.3 Activity Sequencing [Ref 1: pg 206 – 211]

##### 5.4 Activity Resource Estimating [Ref 1: pg 211 – 213]

##### 5.5 Activity Duration Estimating [Ref 1: pg 213 – 214]

##### 5.6 Schedule Development [Ref 1: pg 214 – 215]

###### 5.6.1 Gantt Charts [Ref 1: pg 215 – 217]

###### 5.6.2 Critical Path Method [Ref 1: pg 219 – 226]

###### 5.6.3 Program Evaluation and Review Technique (PERT) [Ref 1: pg 230 – 231]

### **Section 6 : Project Cost Management (06 hrs)**

**Instructional Objectives:**

- Describe the importance of project cost management
- Explain basic project cost management principles, concepts, and terms
- Discuss different types of cost estimates and methods for preparing them
- Identify the processes involved in cost budgeting
- Prepare a cost estimate and budget for an information technology project
- Describe cost control

**Material /Sub Topics**

- 6.1 Importance and Principles of Project Cost Management [Ref 1: pg. 249 - 256]
- 6.2 Cost Estimating
  - 6.2.1 Types of cost estimates [Ref 1: pg. 256 - 258]
  - 6.2.2 Cost estimation tools and techniques  
[Ref 1: pg. 258 - 260 ]
  - 6.2.3 Typical problems and examples [Ref 1: pg. 260 - 267]
- 6.3 Cost Budgeting [Ref 1: pg. 267 - 268]
- 6.4 Cost Control [Ref 1: pg. 268 - 269]

**Section 7 : Project Quality Management (06 hrs)****Instructional Objectives**

- Appreciate the importance of project quality management for information technology products and services
- Define project quality management and describe its main three processes
- Describe given tools and techniques for quality control (Pareto Analysis, Statistical sampling, testing)
- Summarize major contributions to modern quality management
- Describe major cost categories related to information technology project quality



**Material /Sub Topics**

- 7.1 Importance of Project Quality Management [Ref 1: pg. 290 - 292]
- 7.2 What is Project Quality Management [Ref 1: pg. 293 - 294]
  - 7.2.1 Quality planning [Ref 1: pg. 294 - 296]
  - 7.2.2 Quality assurance [Ref 1: pg. 297 - 299]
  - 7.2.3 Quality control [Ref 1: pg. 299 - 300]
- 7.3 Tools and Techniques for Quality Control
  - 7.3.1 Pareto analysis [Ref 1: pg. 300]
  - 7.3.2 Statistical sampling [Ref 1: pg. 301 - 302]
  - 7.3.3 Testing [Ref 1: pg. 311 - 314]
- 7.4 Modern Quality Management
  - 7.4.1 Deming fourteen points for management [Ref 1: pg. 314 - 315]
  - 7.4.2 Top management commitment for quality [Ref 1: pg. 315 - 316]
  - 7.4.3 ISO standards for quality [Ref 1: pg. 319 - 320]
- 7.5 Cost of Quality [Ref 1: pg. 321 - 322]

**Section 8 : Project Human Resource Management (05 hrs)****Instructional Objectives**

- Define project human resource management and describe its processes
- Explain theories of managing people for active participation in IT projects
- Explain human resource planning and be able to create a project organizational chart, responsibility assignment matrix, and resource histogram
- Explain the concepts of resource assignment, resource loading, and resource leveling
- Describe developing the project team
- Explain techniques that can be used to manage a project team

**Material /Sub Topics**

- 8.1 What is project Human Resource Management? [Ref 1: pg. 345 - 346]
- 8.2 Keys to Managing People [Ref 1: pg. 346]

- 8.2.1 Motivation theories [Ref 1: pg. 346 – 347]
- 8.2.2 Maslow's hierarchy of needs [Ref 1: pg. 347 – 348]
- 8.2.3 Improving effectiveness [Ref 1: pg. 353 – 355]
- 8.3 Human Resource Planning [Ref 1: pg. 356]
  - 8.3.1 Project organizational charts [Ref 1: pg. 357 - 359]
  - 8.3.2 Responsibility assignment matrices [Ref 1: pg. 359 - 361]
  - 8.3.3 Management plans and resource histograms [Ref 1: pg. 361 – 362]
- 8.4 Acquiring the Project Team [Ref 1: pg. 362]
  - 8.4.1 Resource assignment [Ref 1: pg. 362 - 364]
  - 8.4.2 Resource loading [Ref 1: pg. 364 - 365]
  - 8.4.3 Resource leveling [Ref 1: pg. 366 - 368]
- 8.5 Developing the Project Team [Ref 1: pg. 368 - 370]
- 8.6 Managing the Project Team [Ref 1: pg. 374 - 376]

## **Section 9 : Project Communications Management (04 hrs)**

### **Instructional Objectives**

- Appreciate the communication skills and social skills
- Describe the main processes in project communication management
- Explain main elements in the communications management plan
- Perform a stakeholder communications analysis
- Describe various methods for distributing project information and the advantages and disadvantages of each
- Explain how stakeholders can be kept informed about project status and resolve any issues
- List various methods for improving project communications, such as managing conflicts, running effective meetings, using e-mail and other technologies effectively

**Material /Sub Topics**

- 9.1 Introduction to Project Communications Management [Ref 1: pg. 386 - 388]
- 9.2 Communications Planning [Ref 1: pg. 388 - 390]
- 9.3 Information Distribution [Ref 1: pg. 391]
  - 9.3.1 Using technology to enhance information distribution [Ref 1: pg. 391]
  - 9.3.2 Formal and informal methods for distributing information [Ref 1: pg. 391 - 392]
  - 9.3.3 Distributing important information in an effective and timely manner [Ref 1: pg. 393 - 394]
  - 9.3.4 Selecting the appropriate communications medium [Ref 1: pg. 394 - 395]
- 9.4 Performance Reporting [Ref 1: pg. 399 - 400]
- 9.5 Suggestions for Improving Project Communications [Ref 1: pg. 402]
  - 9.5.1 Using communication skills to manage conflict [Ref 1: pg. 402 - 404]
  - 9.5.2 Developing better communication skills [Ref 1: pg. 404 - 405]
  - 9.5.3 Running effective meetings [Ref 1: pg. 405 - 406]
  - 9.5.4 Using e-mail effectively [Ref 1: pg. 407 - 408]

**Section 10 : Project Risk Management (05 hrs)****Instructional Objectives**

- Describe what risk is and the importance of managing it
- List the elements involved in project risk management and contents in a risk management plan
- Identify common sources of risk in information technology projects
- Explain the qualitative risk analysis process and how to calculate risk factors, create probability/impact matrixes, apply the top ten risk item tracking technique, and use expert judgment to rank risks
- Explain the quantitative risk analysis process and how to apply decision trees

**Material /Sub Topics**

- 10.1 The Importance of Project Risk Management  
[Ref 1: pg. 425 - 430]
- 10.2 Risk Management Planning [Ref 1: pg. 430 - 436]
- 10.3 Qualitative Risk Analysis [Ref 1: pg. 441 - 447]
- 10.4 Quantitative Risk Analysis [Ref 1: pg. 447 - 449]

**Section 11 : Project Procurement Management (03 hrs)****Instructional Objectives**

- Describe the main processes in procurement management
- Describe given tools and techniques in acquisition (make-or-buy analysis, and expert judgment)
- List the topics in Procurement Management Plan
- List the main contents of a Request for Proposal
- Describe the contract administration and closure process

**Material /Sub Topics**

- 11.1 What is Project Procurement Management ? [Ref 1: pg. 470 – 471]
- 11.2 Tools and Techniques for Planning Purchases
  - 11.2.1 Make or buy analysis [Ref 1: pg. 472 – 473]
  - 11.2.2 Expert judgment [Ref 1: pg. 474 – 478]
- 11.3 Procurement Management Plan [Ref 1: pg. 478 - 479]
- 11.4 Planning Contracting [Ref 1: pg. 480 - 483]
- 11.5 Requesting Seller Responses and Selecting Sellers [Ref 1: pg. 483 - 485]
- 11.6 Administering and Closing the Contract [Ref 1: pg. 486 - 488]