<table>
<tr><td>1</td><td colspan="6">Name of Course/ Module : OPERATING SYSTEM</td></tr>
<tr><td>2</td><td colspan="6">Course Code : DFC2063</td></tr>
<tr><td>3</td><td colspan="6">Name (s) of academic staff :</td></tr>
<tr><td>4</td><td colspan="6">Rationale for the inclusion of the course/ module in the programme :
This course is continuity to foundational knowledge in problem solving which is a part of the requirement in body of knowledge in Information Technology field. It’s a very basic computer programming skills needed to enhance to next level.</td></tr>
<tr><td>5</td><td colspan="6">Semester and Year offered: Semester 1 / Year 1</td></tr>
<tr><td rowspan="3">6</td><td rowspan="2">Student Learning Time (SLT)</td><td colspan="4">Dependent Learning (DL)</td><td>Independent Learning (IDL)</td><td>Total</td></tr>
<tr><td>L = Lecture
P = Practical
T = Tutorial
O = Others</td><td>L
28</td><td>P
28</td><td>T
0</td><td>O
0</td><td>64</td><td>120</td></tr>
<tr><td>7</td><td colspan="6">Credit value : 3</td></tr>
<tr><td>8</td><td colspan="6">Prerequisites (if any) : None</td></tr>
<tr><td>9</td><td colspan="6">Learning Outcomes :
Upon completion of the course, students should be able to:
CLO 1 : explain the concept of operating system, memory, process and file management (C2, PLO1).
CLO 2 : perform installation of operating system with appropriate setting and management (P3, PLO2).
CLO 3 : solve problem that related to mobile devices operating system by producing an accurate solution in a team. (C3, P3, A3, PLO1, PLO2, PLO9).</td></tr>
<tr><td>10</td><td colspan="6">Transferable Skills:
Skills and how they are developed and assessed, project and practical experience and Internship
a. Knowledge
b. Practical Skills
c. Leadership and Teamwork Skills
Skills are assessed through :
Problem-Based Task and Practical Task for Generic Student Attribute (GSA). Knowledge are assessed through theoretical methods (Quiz and Test)</td></tr>
<tr><td>11</td><td colspan="6">Teaching-Learning and assessment strategy
a. Teaching-Learning Strategy
Implemented in Problem Based Learning (PBL), guided by lecturers through Face-to-Face and Blended Learning approach.
b. Assessment Strategy
The course assessment is carried out through Coursework Assessment (CA) and Final Examination (FE).</td></tr>
<tr><td>12</td><td colspan="6">Synopsis
OPERATING SYSTEM course introduces the design and implementation of operating systems. This course will cover briefly the evolution of operating system, and also the major components of most operating system. Particular emphasis will be given to three major OS subsystems: process management (processes, threads, CPU scheduling, and deadlock), memory management (segmentation, paging, swapping), file systems, and operating system in most mobile devices today that support for distributed systems and mobile.</td></tr>
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13 **Mode of Delivery**

Interactive Lecture, Discussion, Laboratory Activity and Presentation.

14 **Assessment Methods and Types**

The course assessment is carried out in two sections:

a. Coursework (CA)- 60%

Coursework is continuous assessment that measures knowledge, technical skills and soft skills.

i.	Quiz	(3) -	10%
ii.	Test	(1) -	10%
iii.	Practical Task	(4) -	20%
iv.	Problem Based Task	(1) -	20%

b. Final Examination (FE) – 40 %

15 **Mapping of the course/ module to the Programme Aims**

Course Learning Outcome/ Programme Educational Objectives (PEO)	PEO 1	PEO 2	PEO 3	PEO 4	PEO 5
i. Explain the concept of operating system, memory, process and file management (C2, PLO1)	√				
ii. Perform installation of operating system with appropriate setting and management (P3, PLO2).	√	√			
iii. Solve problem that related to mobile devices operating system by producing an accurate solution in a team. (C3, P3, A3, PLO1, PLO2, PLO9).	√	√			

Programme Educational Objectives (PEO)

PEO 1 : Possess relevant knowledge, skills and aptitude to meet job specifications, organisational and system needs;

PEO 2 : Can utilise current computing tools and techniques by applying knowledge and interpreting information to solve problems, can execute and be responsible for routine tasks;

PEO 3 : Have effective communication skills to convey information, problems and solutions;

PEO 4 : Have teamwork and interpersonal skills, entrepreneurial awareness and are aware of their social and ethical responsibilities; and

PEO 5 : Possess skills for life-long learning and career development.

16 Mapping of the course/ module to the Programme Learning Outcomes

Course Learning Outcome (CLO) / Programme Learning Outcomes (PLO)	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9
i. Explain the concept of operating system, memory, process and file management (C2, PLO1)	√								
ii. Perform installation of operating system with appropriate setting and management (P3, PLO2).		√							
iii. Solve problem that related to mobile devices operating system by producing an accurate solution in a team. (C3, P3, A3, PLO1, PLO2, PLO9).	√								√

Programme Learning Outcomes (PLO)

PLO 1 : Apply the foundation of computing, mathematics and soft skills to be competent and possess strong understanding in related Information Technology (IT) fields;
PLO 2 : Practice technical skills by applying appropriate methodologies, models and techniques in IT fields;
PLO 3 : Communicate effectively with IT Professionals, other professionals and community;
PLO 4 : Demonstrate strong analytical and critical thinking skills to troubleshoot and solve problems within realistic constraints by applying knowledge, principles and skills in IT;
PLO 5 : Demonstrate an awareness of and consideration for society, health, safety, legal and cultural issues and their consequent responsibilities;
PLO 6 : Acquire life-long learning and professional development to enrich knowledge and competencies;
PLO 7 : Inculcate entrepreneurial skills in the related discipline that contributes towards national growth and be competitive in IT industries;
PLO 8 : Adhere to professional codes of ethics and enhance humanistic values to adapt to the real challenges in working environment; and
PLO 9 : Demonstrate effective leadership and teamwork skills.

17 Content outline of the course/ module and the SLT per topic

Course Outline (Suggested Sequence of Topics)	Recommended Time Allocation					
	L	P	T	O	IDL	Total
1.0 INTRODUCTION TO OPERATING SYSTEM a. Operating systems environment. b. Basic functions of operating system c. Architecture of operating systems d. Components of operating system e. Interfaces of operating systems f. Relationship between system calls and Application Programming Interface (API).	7	0	0	0	9.00	16.00
2.0 MEMORY AND PROCESS MANAGEMENT a. Memory management of operating system b. Characteristics of the different levels in the hierarchy of memory organization. c. Memory management strategies d. Memory swapping technique during system processing. e. Fixed-partition memory management as applied in multiprogramming systems. f. Process management of operating system. g. Scheduling process is performed by an	6	6	0	0	16.00	28.00

	operating system. h. Scheduling algorithms. i. Threads. j. Deadlock Situation in an Operating System.						
	3.0 FILE MANAGEMENT a. File management in operating system. b. File organization technique is appropriate for a specific device. c. Protection of file in operating system d. Access Control Matrix approach in protection problems. e. Techniques used to prevent data loss.	5	7	0	0	12.00	24.00
	4.0 WINDOWS OPERATING SYSTEM **Latest Microsoft Windows operating system.** a. Windows 32 bits and Windows 64 bits. b. Install Windows on a computer. c. Data security. d. Utilities program that compatible with Windows. e. Advanced Firewall. f. Personalization and Themes that available in Windows. g. Virtual Memory in Windows. h. System protection for your partitions and drives	5	10	0	0	10.00	25.00
	5.0 OTHERS AND MOBILE DEVICE OPERATING SYSTEM a. Mobile operating system. b. Methods for installing application and content sources on mobile devices. c. Android Touch Interface. d. Apps, Widgets, and Folders. e. iOS Touch Interface.	5	5	0	0	17.00	27.00
	TOTAL	**28**	**28**	**0**	**0**	**64.00**	**120.00**

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- **Main references supporting the course**

Silberschatz, A., Galvin, P.B. and Gagne, G. (2019), *Operating System Concepts*, John Wiley& Sons. Inc, USA. (ISBN: 9781119586166).

Bhatt, Pramod Chandra P. (2019), *An Introduction to Operating Systems: Concepts and Practice (Gnu/Linux and Windows), Fifth Edition*, Phi Learning Pvt. Ltd (ISBN: 9789387472884)

- **Additional references supporting the course**

Dr. Priyanka Rathee (2019), *Basic Principles of an Operating System: Learn the Internals and Design Principles*, BPB Publications. (ISBN: 9789388511711)

19	**Other additional information :** **Practical session activity** Students perform hands-on activities using Virtual Machine. All practical activities **MUST** related to practical activities in Introduction to Computer System course.