



Course Specification

Course Name: [Computer Languages for Modeling and Operations Research]

Course Code: DS342

I. Basic Course Information

Major or minor element of program: [Both Major & Minor

Department offering the course: [Operations Research and Decision Support Department]

Academic level: 300 Level

Semester in which course is offered: [Second (spring) Semester]

Course pre-requisite(s): [Linear and Integer Programming [DS311]]

Credit Hours: 3

Contact Hours Through:

| Lecture | Tutorial* | Practical* | Total |
|---------|-----------|------------|-------|
| 2.5 | 0.0 | 1.5 | 4.0 |

* 1.5 hours for **either** Tutorial or Practical

Approval date of course specification: January 2015

II. Overall Aims of Course

[This course aims to enhance the knowledge and the capabilities of the students to use different software packages that could assist them in analyzing problems and gaining more understanding of operations research methods, statistics, and simulation modeling used in solving problems.]

III. Program ILOs covered by course

| Program Intended Learning Outcomes (By Code) | | | |
|--|---------------------|---------------------|----------------|
| Knowledge & Understanding | Intellectual Skills | Professional Skills | General Skills |
| [K3,K14,K16,K19] | [I11,I12,I13] | [P2,P3,P13] | [G5,G6,G7,G9] |



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IV. Intended Learning Outcomes of Course (ILOs)

a. Knowledge and Understanding

On completing the course, students should be able to:

- K.1 [Identify the different methodologies for entering data on different software packages.
- K.2 Describe how to analyze the set of data entered.
- K.3 Use different packages to solve optimization problems.
- K.4 Record the syntax and procedure of performing analyses.]

b. Intellectual/Cognitive Skills

On completing the course, students should be able to:

- I.1 [Analyze a problem and plan the appropriate computer system.
- I.2 Select the appropriate package or tool/procedure for handling the problem and providing the requirements. Organize work.
- I.3 Develop a decision support tool using the packages.
- I.4 Generate the necessary reports and interpreting the results.]

c. Practical/Professional Skills

On completing the course, students should be able to:

- P.1 [Learn the methodology for entering/retrieving data on different software packages.
- P.2 Use the software efficiently and fast.
- P.3 Perform mathematical and statistical techniques through the software.
- P.4 Perform simulation modeling and solve optimization problems through software.]

d. General and Transferable Skills

On completing the course, students should be able to:

- G.1 [Think logically and work systematically.
- G.2 Organize work.
- G.3 Work in teams.
- G.4 Work under pressure, fast, and deliver in time.]

V. Course Matrix Contents

| | Main Topics / Chapters | Duration (Weeks) | Course ILOs Covered by Topic (By ILO Code) | | | |
|----|--|------------------|--|----------|----------|----------|
| | | | K & U | I.S. | P.S. | G.S. |
| 1- | [Excel formatting] | [1] | [K1] | [] | [] | [G1] |
| 2- | [Excel formulae, functions, and charts] | [2] | [K1,K2] | [] | [] | [G2] |
| 3- | [Excel Add-In Tool Pak and Crystal Ball] | [2] | [K3] | [I1,I2] | [] | [] |
| 4- | [Excel database functions and pivot tables] | [2] | [K4] | [] | [P1] | [] |
| 5- | [GAMS Basic and syntax] | [2] | [K4] | [I3] | [P2,P3] | [G3,G4] |
| 6- | [VDSS Basics and syntax] | [2] | [K4] | [I4] | [] | [] |
| 7- | [Primavera (Project Management Software)] | [2] | [K4] | [I4] | [P4] | [] |
| | Net Teaching Weeks | 13 | | | | |



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VI. Course Weekly Detailed Topics / hours / ILOs

| Week No. | Sub-Topics | Total Hours | Contact Hours | |
|-----------------------------|---|-------------|-------------------|------------------|
| | | | Theoretical Hours | Practical Hours* |
| 1 | Excel formatting | 2.5 | 2.5 | |
| 2 | Excel formulae, functions, and charts | 4 | 2.5 | 1.5 |
| 3 | Excel formulae, functions, and charts | 4 | 2.5 | 1.5 |
| 4 | Excel Add-In Tool Pak and Crystal Ball | 4 | 2.5 | 1.5 |
| 5 | Excel Add-In Tool Pak and Crystal Ball | 4 | 2.5 | 1.5 |
| 6 | Excel database functions and pivot tables | 4 | 2.5 | 1.5 |
| 7 | Midterm Exam | | | |
| 8 | Excel database functions and pivot tables | 4 | 2.5 | 1.5 |
| 9 | GAMS Basic and syntax | 4 | 2.5 | 1.5 |
| 10 | GAMS Basic and syntax | 4 | 2.5 | 1.5 |
| 11 | VDSS Basics and syntax | 4 | 2.5 | 1.5 |
| 12 | VDSS Basics and syntax | 4 | 2.5 | 1.5 |
| 13 | Primavera (Project Management Software) | 4 | 2.5 | 1.5 |
| 14 | Primavera (Project Management Software) | 4 | 2.5 | 1.5 |
| 15 | Final Exam | | | |
| Total Teaching Hours | | 51 | 33 | 18 |

* No Practical/Tutorial during the first week of the semester

VII. Teaching and Learning Methods

| Teaching/Learning Method | Selected Method | Course ILOs Covered by Method (By ILO Code) | | | |
|--|-----------------|---|---------------------|---------------------|----------------|
| | | K & U | Intellectual Skills | Professional Skills | General Skills |
| Lectures & Seminars | * | All | All | All | All |
| Tutorials | | | | | |
| Computer lab Sessions | * | All | All | All | All |
| Practical lab Work | * | All | All | All | All |
| Reading Materials | | | | | |
| Web-site Searches | | | | | |
| Research & Reporting | | | | | |
| Problem Solving / Problem-based Learning | | | | | |
| Projects | | | | | |
| Independent Work | | | | | |
| Group Work | * | | All | P2,P3,P4 | G2,G3,G4 |
| Case Studies | * | | All | P2,P3,P4 | G2,G4 |
| Presentations | | | | | |
| Simulation Analysis | | | | | |
| Others (Specify): | | | | | |



Course Specification

VIII. Assessment Methods, Schedule and Grade Distribution

| Assessment Method | Selected Method | Course ILOs Covered by Method (By ILO Code) | | | | Assessment Weight / Percentage | Week No. |
|---------------------|-----------------|---|------|------|------|--------------------------------|-------------------|
| | | K & U | I.S. | P.S. | G.S. | | |
| Midterm Exam | * | All | All | All | All | 15% | 7 |
| Final Exam | * | All | All | All | All | 60% | 14 |
| Quizzes | * | All | All | All | All | 5% | 7 |
| Course Work | * | All | All | All | All | 10% | On a weekly basis |
| Report Writing | | | | | | | |
| Case Study Analysis | | | | | | | |
| Oral Presentations | | | | | | | |
| Practical | * | All | All | All | All | 10% | 10 |
| Group Project | | | | | | | |
| Individual Project | | | | | | | |
| Others (Specify): | | | | | | | |

IX. List of References

| | |
|---------------------------------|--------|
| Essential Text Books | • None |
| Course notes | • None |
| Recommended books | • None |
| Periodicals, Web sites, etc ... | • None |

X. Facilities required for teaching and learning

- Computer projector
- Computer labs

Course coordinator: [Ass. Prof. Ihab El-Khodary]

Head of Department: Prof. Mohamed Mostafa Saleh

Date: January 2015