I. **Course Objectives:** This course will provide basic coverage of two important software platforms: data warehousing (DW) and event processing, which are essential for a business intelligence. We will study the Dimensional Fact Model (DFM) that provides the conceptual layer of a DW and then discuss a number of logical models that are used to represent a multidimensional data structures: ROLAP and MOLAP. Next, we will discuss the steps involved in populating a DW: ETL—Extract, Transform and Load. In the second part of the course, after an introductory coverage of the basic principles of workflow management, a comparative analysis between workflow management and business process management paradigms will be presented. After this, the course will focus on events management in the context of business processes. The students will get hands-on experience through programming projects with software for dashboards (TABLEAU), data warehousing (Cognos) and event processing (Esper).

II. **Required texts¹:**

III. **Recommended text and/or other materials:**

IV. **Tentative Outline of Topics**

<table>
<thead>
<tr>
<th>Part 1: Data Warehousing</th>
<th>Introduction: DW and Event Processing for Business Intelligence. DW –requirements, basic architecture and life-cycle.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dashboards: Effective display media: Sparlines, box lines, scatter plots, treemaps, etc…</td>
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<tr>
<td></td>
<td>Conceptual Modeling of DW: The DFM: facts, measures dimensions and cubes Events and Aggregation: additive, non-additive, aggregations with hierarchies Advanced Concepts: slowly-changing dimensions and dynamic</td>
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</tbody>
</table>

¹ On occasions, technical publications will be provided as reading materials.
Part 2: Events Management

Introduction:
- Workflow (management) systems – basic definitions
- Workflows and BPM
- Role of events

Event-Based Programming:
- Event driven behavior and computing
- Business value of event processing (Introductory Case-Study)

Defining Events:
- Main concepts and architecture
- Processing Networks
- Attributes; Payloads; Relationships

Producers vs. Consumers of Events:
- Hardware/Software/Humans
- Interfacing

Event Processing Networks and Contexts
- Agents/Channels/States
- Application/Spatial/Temporal Context

Filtering, Transformations and Patterns Detection:
- Basic Patterns
- Dimensional Patterns
- Policies

Potpourri (Engineering Considerations, Current trends, Optimizations)

V. Workload and Evaluations

Your grades will be based on:
- **Programming Projects (55%)**: three projects which will involve TABLEAU, Cognos and Esper (the third project will assume familiarity with Java). Students are encouraged to work in teams of two.
- **Homework Assignments (15%)**—two HWs
Midterm (30%): will take place in week 7 of the course.

Please note: the distribution given above is approximate and may be subject to some very minor changes. However, the firm-policy will be announced during the last week of classes (Week #10 of the Winter quarter).

Awareness, Academic Responsibilities and Closing Remarks:
be advised that it is each student’s individual responsibility to keep him/herself up-to-date with the announcements made in class, distributed via email, or otherwise posted. The 2nd and the 3rd projects are likely to be done in teams, however, the first project will be an individual assignment. If a particular homework or project is designated as an individual assignment: you are encouraged to discuss certain high-level aspects and/or design approaches with your classmates – however, most of the work needs to be done independently. Similarly for teams assignment – cross-teams discussion regarding high-level aspects is OK – but most of the work needs to be done within a particular team. The policies for cheating are well-defined and there will be no exceptions made for any excuse whatsoever – if caught cheating (both in terms of borrowing someone else’s code, as well as allowing someone to borrow your code), you will automatically fail the class and face a possible expulsion from the University. In addition, notwithstanding our willingness to be understanding for the students’ commitments and time-constraints, please do not attempt to obtain an incomplete grade for the course, based solely on your poor performance – it is against the University regulations.

Lastly, please note that a substantial part of your grade is based on the projects. Hence, you really need to keep yourself up-to-date with the material lectured and start working on the projects as early as possible. You should not allow yourself to fall behind with the topics, as the new ones will be building incrementally upon the older ones, and it will be very hard to catch up.