GENERAL INFORMATION

Instructor: Prasanna P. Karhade
Email: karhade@hku.hk
Office: Room 805 KK Leung
Phone: 3916 4216
Consultation times: By appointment only
Tutor: TBD
Pre-requisites: STAT1602/STAT0302 Business Statistics; ACCT3103 Intermediate Financial Accounting II
Co-requisites: NONE
Mutually exclusive: NONE
Course Website: Moodle

COURSE DESCRIPTION

This course is about descriptive and predictive analysis of time series accounting data as it pertains to accounting professionals. In the era of “big data,” the volume, pace, and complexity of data have made it difficult to understand and use data. At the same time, the explosion of data has brought opportunities for firms to get insights into many aspects of their businesses. Data analytics has become a must-have skill for business managers and accountants. This course will prepare students with fundamental analytics skills. Students will gain hands-on experience with data analytics.

Students should be aware that this is not a computer-skills course. However, it does require use of the computer as a tool for business analytic positions. Students will spend significant portion of their time learning and using data analytics software. Some class assignments will involve the use of computer software.

This course is composed of two parts. In the first part, students will first be exposed to why analytics is important in accounting professions. Students will learn to perform descriptive analytics using various data visualization techniques, and identify potential problems. In the second part, students will learn data-analytics models and their practical applications such as forecasting of time series accounting data. Students will learn to use software to perform the analysis.

COURSE OBJECTIVES

1. Learn how business managers and accountants can benefit from using data analytics
2. Learn how to perform data-driven financial analytics and visualize data to provide clear insights
3. Learn how to use software to perform data analytics such as smoothing and regression-based methods for forecasting
4. Explore how analytics methods are used in accounting applications for forecasting

Programme Learning Outcomes

PLO1: Acquisition and internalization of knowledge of the programme discipline
PLO2: Application and integration of knowledge
PLO3: Inculcating professionalism and leadership
PLO4: Developing global outlook
PLO5: Mastering communication skills
### COURSE LEARNING OUTCOMES

<table>
<thead>
<tr>
<th>Course Learning Outcomes</th>
<th>Aligned Programme Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLO1. Solve business problems using data analytics.</td>
<td>PLO1, 2, 3, 4</td>
</tr>
<tr>
<td>CLO2. Understand value of data in accounting and how accountants can benefit from analytics.</td>
<td>PLO1, 2, 3, 4</td>
</tr>
<tr>
<td>CLO3. Understand techniques to discover and interpret anomalies (outliers) in accounting data.</td>
<td>PLO1, 2, 4</td>
</tr>
<tr>
<td>CLO4. Understand how to use analytical methods for forecasting of time series accounting data.</td>
<td>PLO1, 2, 4</td>
</tr>
<tr>
<td>CLO5. Create visualizations of data to provide managerial insights and interpretations.</td>
<td>PLO2, 4, 5</td>
</tr>
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</table>

### COURSE TEACHING AND LEARNING ACTIVITIES

<table>
<thead>
<tr>
<th>Course Teaching and Learning Activities</th>
<th>Expected contact hour</th>
<th>Study Load (% of study)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T&amp;L1. Lecture with interactive presentation</td>
<td>36 hours</td>
<td>30%</td>
</tr>
<tr>
<td>T&amp;L2. Assignments and e-forum discussions</td>
<td>12 hours</td>
<td>10%</td>
</tr>
<tr>
<td>T&amp;L3. Case-based study and project related data collection and analysis</td>
<td>30 hours</td>
<td>25%</td>
</tr>
<tr>
<td>T&amp;L4. Self-study and preparation</td>
<td>42 hours</td>
<td>35%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>120 hours</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

### Assessment Methods

<table>
<thead>
<tr>
<th>Assessment Methods</th>
<th>Brief Description (Optional)</th>
<th>Weight</th>
<th>Aligned Course Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1. Written assignments</td>
<td>Assignments to analyze data-driven problems</td>
<td>30%</td>
<td>CLO1, 2, 3, 4, 5</td>
</tr>
<tr>
<td>A2. Participation</td>
<td>Participation to discuss topics for clarifying the understanding of analytics concepts</td>
<td>10%</td>
<td>CLO1, 2, 3, 4</td>
</tr>
<tr>
<td>A3. Group project presentation</td>
<td>Case study for analysis and synthesis of the chosen issues of the group project</td>
<td>10%</td>
<td>CLO1, 2, 3, 4, 5</td>
</tr>
<tr>
<td>A4. Midterm examination(s)</td>
<td>Examination(s) enabling students to demonstrate most of the stated CLOs</td>
<td>20%</td>
<td>CLO1, 2, 3, 4</td>
</tr>
<tr>
<td>A5. Case-based analysis (group project)</td>
<td>Analysis of a live case enabling students to demonstrate the stated CLOs</td>
<td>30%</td>
<td>CLO1, 2, 3, 4, 5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### STANDARDS FOR ASSESSMENT

**Course Grade Descriptors**

- **A+, A, A-**
  - Demonstrate a strong understanding of all relevant knowledge
  - Handling questions professionally
  - High participation in discussions and volunteering answering/asking questions
  - Present arguments that have an element of originality
  - Achieve a standard of excellent performance in the exams with very accurate computation and very good analytical and problem solving skills
<table>
<thead>
<tr>
<th>Grade</th>
<th>Assessment Rubrics</th>
</tr>
</thead>
</table>
| **A+, A, A-** | - Demonstrate a strong understanding of all relevant knowledge  
- Present arguments that have an element of originality  
- Achieve a standard of excellent performance in the assessments with very accurate computation and very good analytical and problem solving skills  
- Excellent writing report and presentation |
| **B+, B, B-** | - Demonstrate a good understanding of all relevant knowledge  
- Handling questions in a logical way  
- Good participation in discussions  
- Present arguments that go beyond the lecture and textbook  
- Achieve a standard of good performance in the exams with accurate computation and good analytical and problem solving skills  
- Good writing report and presentation |
| **C+, C, C-** | - Demonstrate a basic understanding of the concepts involved  
- Fairly address questions as set  
- Some participation in discussions  
- Present arguments in a well-structure manner  
- Meet a standard of acceptable performance in the exams with reasonably accurate computation and acceptable analytical and problem solving skills  
- Acceptable writing report and presentation |
| **D+, D** | - Demonstrate a minimum understanding of the concepts involved  
- Barely address questions as set  
- Minimal or no participation in discussions  
- Present arguments in a marginally acceptable manner  
- Meet a standard of marginally acceptable performance in the exams with some errors in computation and barely adequate analytical and problem solving skills  
- Marginally acceptable writing report and presentation |
| **F** | - Demonstrate a poor understanding of the concepts involved  
- Unable or unwilling to handle questions  
- Minimal or no participation in discussions  
- Present arguments poorly  
- Fail to meet a standard of passing the exams with major errors in computation and inadequate analytical and problem solving skills  
- Poorly writing report and presentation |

**Assessment Rubrics for written group projects, assignments and exams:**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Assessment Rubrics</th>
</tr>
</thead>
</table>
| **A+, A, A-** | - Demonstrate a strong understanding of all relevant knowledge  
- Present arguments that have an element of originality  
- Achieve a standard of excellent performance in the assessments with very accurate computation and very good analytical and problem solving skills  
- Excellent writing report and presentation |
| **B+, B, B-** | - Demonstrate a good understanding of all relevant knowledge  
- Present arguments that go beyond the lecture and textbook  
- Achieve a standard of good performance in the assessments with accurate computation and good analytical and problem solving skills  
- Good writing report and presentation |
<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
</table>
| C+, C, C- | - Demonstrate a basic understanding of the concepts involved  
- Present arguments in a well-structure manner  
- Meet a standard of acceptable performance in the assessments with reasonably accurate computation and acceptable analytical and problem solving skills  
- Acceptable writing report and presentation |
| D+, D | - Demonstrate a minimum understanding of the concepts involved  
- Present arguments in a marginally acceptable manner  
- Meet a standard of marginally acceptable performance in the assessments with some errors in computation and barely adequate analytical and problem solving skills  
- Marginally acceptable writing report and presentation |
| F | - Demonstrate a poor understanding of the concepts involved  
- Present arguments poorly  
- Fail to meet a standard of passing the assessments with major errors in computation and inadequate analytical and problem solving skills  
- Poorly writing report and presentation |

**Assessment Rubrics for participation:**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
</table>
| A+, A, A- | - High participation in discussions  
- Always attend in-class discussions  
- Demonstrate a strong understanding of all relevant knowledge  
- Handling questions professionally  
- Present arguments that have an element of originality  
- Respect others and follow the class rules (no chatting and do not use cell phone) |
| B+, B, B- | - Good participation in discussions  
- Often attend the in-class discussions  
- Demonstrate a good understanding of all relevant knowledge  
- Handling questions in a logical way  
- Present arguments that go beyond the lecture and textbook  
- Respect others and follow the class rules (no chatting and do not use cell phone) |
| C+, C, C- | - Some participation in discussions  
- Sometimes attend the in-class discussions  
- Demonstrate a basic understanding of the concepts involved  
- Fairly address questions as set  
- Present arguments in a well-structure manner  
- Respect others and follow the class rules (no chatting and do not use cell phone) |
| D+, D | - Minimal or no participation in discussions  
- Rarely attend the in-class discussions  
- Demonstrate a minimum understanding of the concepts involved  
- Barely address questions as set  
- Present arguments in a marginally acceptable manner |
- Respect others and follow the class rules (no chatting and do not use cell phone)

| F |  ● Minimal or no participation in discussions  
|  ● Almost never attend the tutorials and in-class discussions  
|  ● Demonstrate a poor understanding of the concepts involved  
|  ● Unable or unwilling to handle questions  
|  ● Present arguments poorly  
|  ● Behave poorly in class (often chatting with others, using cell phones, or being late) |

### COURSE CONTENT AND TENTATIVE TEACHING SCHEDULE

1. Course overview: what is data analytics and how is it important to accountants?
2. Brief overview of sources of time series accounting data
3. Basic analysis, and data visualization
4. Time series forecasting analytics for accounting data
5. Smoothing techniques for time series forecasting analytics for accounting data
6. Regression-based, tree-based techniques for time series forecasting and classification of accounting data
7. Course summary: Review and group project presentations

### REQUIRED/RECOMMENDED READINGS & ONLINE MATERIALS

**Recommended Teaching Material:**

2. Data Mining for Business Analytics. Shmueli, Galit.
3. HBR Guide to Data Analytics for Basics for Managers

Additional course readings, cases and course project details will be provided.

### MEANS/PROCESSES FOR STUDENT FEEDBACK ON COURSE

- Conducting mid-term survey in additional to SETL around the end of the semester
- Online response via Moodle site
- Others: Email communication

### COURSE POLICY (e.g. plagiarism, academic honesty, attendance, etc.)
An orderly learning environment is extremely important for this course. Disruptive behaviors are inconsiderate to other students as well as to the instructor, and are absolutely unacceptable. Talking during lectures, arriving to class late, and any other disruptions of mobile devices are not allowed; students who are responsible for any of these actions will be subject to academic penalty and will be asked to leave the classroom.

Any dishonesty—such as cheating, false representation, plagiarism, etc.—that comes to my attention will result in an F in the course.

Academic dishonesty includes cheating, plagiarism, unauthorized collaboration, falsifying academic records, and any act designed to avoid participating honestly in the learning process. Scholastic dishonesty also includes, but is not limited to, providing false or misleading information to receive a postponement or an extension on an exam or other assignment. The responsibilities of both students and faculty with regard to scholastic dishonesty are described in detail in the Disciplinary Committee Regulations (http://www.hku.hk/pubunit/cal99/104f.htm). By teaching this course, I have agreed to observe all of the faculty responsibilities described in that document. By enrolling in this class, you have agreed to observe all of the student responsibilities described in that document. If the application of that policy statement to this class and its assignments is unclear in any way, it is your responsibility to ask me for clarification.

Students are encouraged to give feedback on the course through mid-term survey in additional to SETL around the end of the semester and online interaction via Moodle site.

**ADDITIONAL COURSE INFORMATION** (e.g. e-learning platforms & materials, penalty for late assignments, etc.)

**Software Tools Used in This Course**

1. Microsoft Excel
2. Microsoft XLMiner

**General Course Policies and Rules**

**Submissions**
All submissions, including but not limited to project proposals, project updates, project reports, exams and assignments, are to be turned in **on or before 8:00 am of the due date**. Late submissions will have points taken off (10% of base mark per day).

All submissions should be typewritten on A4 size paper having one inch margins on all sides, in font size 12, with double space between all text lines. Remember to state the names of all authors on all submissions. A student whose name is not stated on the submission will not receive any credit. Failure to mention any names on the submission will result in the entire group receiving an F grade for the submission.

**Attendance and Late Entry**
We treat our sessions as a business meeting and will start on time and try to end on time; if you are unable to attend a session, please let me know not to expect you by informing me beforehand by email. Though attendance of all lectures is not mandatory, it is strongly encouraged, and the questions in examinations will cover topics discussed in the lectures. **Coming late to class, or exit and entrance during class sessions is severely discouraged unless pre-arranged.** Repeated disturbance from entries and exits during class may be penalized at the instructor's discretion.

The written examinations are not to be missed unless under exceptional cases. A make-up exam will usually not be offered.

**Class Discipline**
Please maintain the decorum of the class sessions. **I expect a level of commitment and professionalism commensurate with that expected in a business meeting.** Please be prepared to actively participate in an interesting, rigorous, challenging, fun, and valuable session. The class environment will be informal and questions are welcome and encouraged. However, do not have side conversations during class. It is distracting and class suffers. Repeated disturbance from side conversations and lack of professionalism during class may be penalized at the instructor’s discretion.

We may have guest speakers in this class. Please be courteous to our guests.

Some of the guests may require you to sign a Non-Disclosure Agreement (NDA) / Confidentiality Agreement (CA) to protect their nonpublic, proprietary business information. If you do not wish to sign such an agreement, you may be excused from that particular segment of the class. If you do sign these agreements, please follow them in letter and spirit. Respect the privacy and confidentiality of the information shared with you and do not disseminate it beyond our class.

**In-class Technology Usage**
Research shows that computer and smartphone usage by students during class disturbs other students except during activities when the usage is explicitly part of learning. Thus, please keep technology (computers, tablets, or smartphones) usage in class to a minimum. Using technology for taking notes is acceptable. However, do not surf, tweet, or email during
class unless we are conducting an activity that calls for such actions. Remember to mute your cellphone. Repeated disturbance from cell phones or usage of technology for off-topic purposes during class may be penalized at my discretion.

**Communication**

WhatsApp is my preferred mode of communication. Please send me a message on the course WhatsApp group (which will be created at the end of the add/drop period) if you need to set up an appointment to discuss any issue with me. A request for an appointment must be made at least 48 hours in advance. I will make course related announcements on the WhatsApp group. You may also catch me on email, Skype, or Facebook. I check my email regularly; however, due to the sheer quantity of email, my replies are short, tardy and rare. All emails must be written in a formal business format, with complete sentences, correctly spelled words, and correct punctuation. Please also ensure that you check the class Moodle website periodically as I distribute readings and reference material through it.

**Academic Integrity**

As a member of this course, you agree to be bound by the university regulations on academic dishonesty. Please check the university statement on plagiarism at [http://www.hku.hk/plagiarism/](http://www.hku.hk/plagiarism/). There is a zero tolerance policy for violations of the university regulations in this course and the regulations will be strictly enforced. Violations by any one student are unfair to all other students and go against the values of the instructor, the program, the school, and the university. Since you are expected to be familiar with university regulations and commonly accepted standards of academic integrity, ignorance of these regulations or such standards is not sufficient evidence of lack of intent of academic dishonesty.

Remember to acknowledge and attribute all sources, including web sources, or ideas, results and words. Please properly acknowledge all contributors to a piece of work; similarly, do not incorrectly attribute contribution to those who did not do so.

Do not plagiarize papers or reports, and do not submit the same paper to multiple courses. Ensure that all work submitted to this course is produced without the aid of unsanctioned materials or unsanctioned collaboration.

Also note that all handouts, exams and materials that will be provided in any form are for your own personal class use. These materials should not be reproduced or distributed in electronic or other media at other sites.

Please note that photographing, recording, or broadcasting of the class lectures and presentations is not allowed and any sharing of such materials is considered a gross violation of course regulations.

There are various ways in which the principles and standards of academic integrity can be violated. Below is an extensive, but not exhaustive, list of examples of activities which are considered to be academically dishonest.

**Plagiarism:** Plagiarism is the use of words or ideas of another person without giving appropriate credit in an attempt to represent those words or ideas as one’s own work. This includes:

- Failure to properly identify direct quotations from an oral, printed, or electronic source by quotation marks and citation.
- Failure to properly attribute paraphrasing or summarized material from other sources.
- Failure to properly attribute non-textual material, such as graphs, photographs, diagrams, tables, and videos from other sources.
- Submitting a paper written by another, including those purchased or downloaded from online sources.

**Fabrication:** Fabrication is the falsification of information, including but not limited to, data, sources, or citations, and using such false information in an academic exercise. This includes:

- Citing a source that does not exist.
- Misrepresenting the source of information.
- Inventing, making up or falsifying information.
- Selectively omitting or altering data that do not support one’s conclusions.

**Cheating:** Cheating is the attempted or actual use of trickery, deception, or fraud in an academic exercise. It encompasses the attempted or actual use of inappropriate or prohibited sources or aids, or misrepresentation of contribution. Cheating includes:

- Copying another student’s work on an academic exercise.
- Using or possessing books, notes, or other prohibited materials / electronic devices.
- Collaborating or conversing with others or receiving any other type of external assistance on academic exercises without the permission of the instructor.
- Acquiring a copy of or answers to an examination prior to its administration.

**Facilitation of Dishonesty:** Facilitation of dishonesty is helping or attempting to help another person to violate the principles and standards of academic integrity. This includes:

- Substituting for another person in an academic exercise.
- Facilitating others to copy one’s work on an academic exercise.
- Distributing or selling examination papers or term papers to other students.

**Classroom Environment and Expectations**

As a student in my class, you have both rights and responsibilities and you will conduct yourself with respect. Together all of us will develop and nurture the learning environment in the classroom. Please ask me about the 3Rs model of rights, responsibilities and respect.
# Tentative Schedule

<table>
<thead>
<tr>
<th>Month</th>
<th>Date</th>
<th>Venue</th>
<th>Topics</th>
<th>Readings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>18</td>
<td>Classroom KKLG110</td>
<td>Introduction to the forecasting analytics</td>
<td>Chapter 1; <a href="#">Lecture Slides</a>; HBR Guide #16</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td><strong>Lab KK610</strong></td>
<td>Data Visualization, Smoothing</td>
<td>Chapter 2; <a href="#">Lecture Slides</a>; HBR Guide #17</td>
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<tr>
<td></td>
<td>1</td>
<td>Classroom KKLG110</td>
<td>The Forecasting Process &amp; Thinking like a data scientist! Seasonality</td>
<td>Chapter 1,2; HBR Guide #3</td>
</tr>
<tr>
<td>Feb</td>
<td>8</td>
<td><strong>Public Holiday</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15</td>
<td><strong>Lab KK610</strong></td>
<td>Performance Evaluation; Smoothing, Regression Based models</td>
<td>Chapter 3; <a href="#">Lecture Slides</a></td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>Classroom KKLG110</td>
<td>Smoothing Methods; Level, Trend and Seasonal Models</td>
<td>Chapter 5; <a href="#">Lecture Slides</a></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td><strong>Lab KK610</strong></td>
<td>Mid-term Review; Mid-term Exam</td>
<td>Chapter 5; <a href="#">Lecture Slides</a>; HBR Guide #11</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Reading Week</td>
<td>No class</td>
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<td></td>
<td>15</td>
<td>Classroom KKLG110</td>
<td>Differencing</td>
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<tr>
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<td>22</td>
<td><strong>Lab KK610</strong></td>
<td>Special Topics</td>
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<td>29</td>
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<td>Special Topics</td>
<td>TBA</td>
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<td>5</td>
<td><strong>Public Holiday</strong></td>
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<tr>
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<td>12</td>
<td><strong>Lab KK610</strong></td>
<td>Regression-based forecasting</td>
<td>Chapter 6; HBR Guide # 12</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td><strong>Public Holiday</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>Classroom KKLG110</td>
<td>Presentations</td>
<td></td>
</tr>
</tbody>
</table>

Deliverables, Assignments, To be decided.
Classroom: KKLG110; Lab: KK610