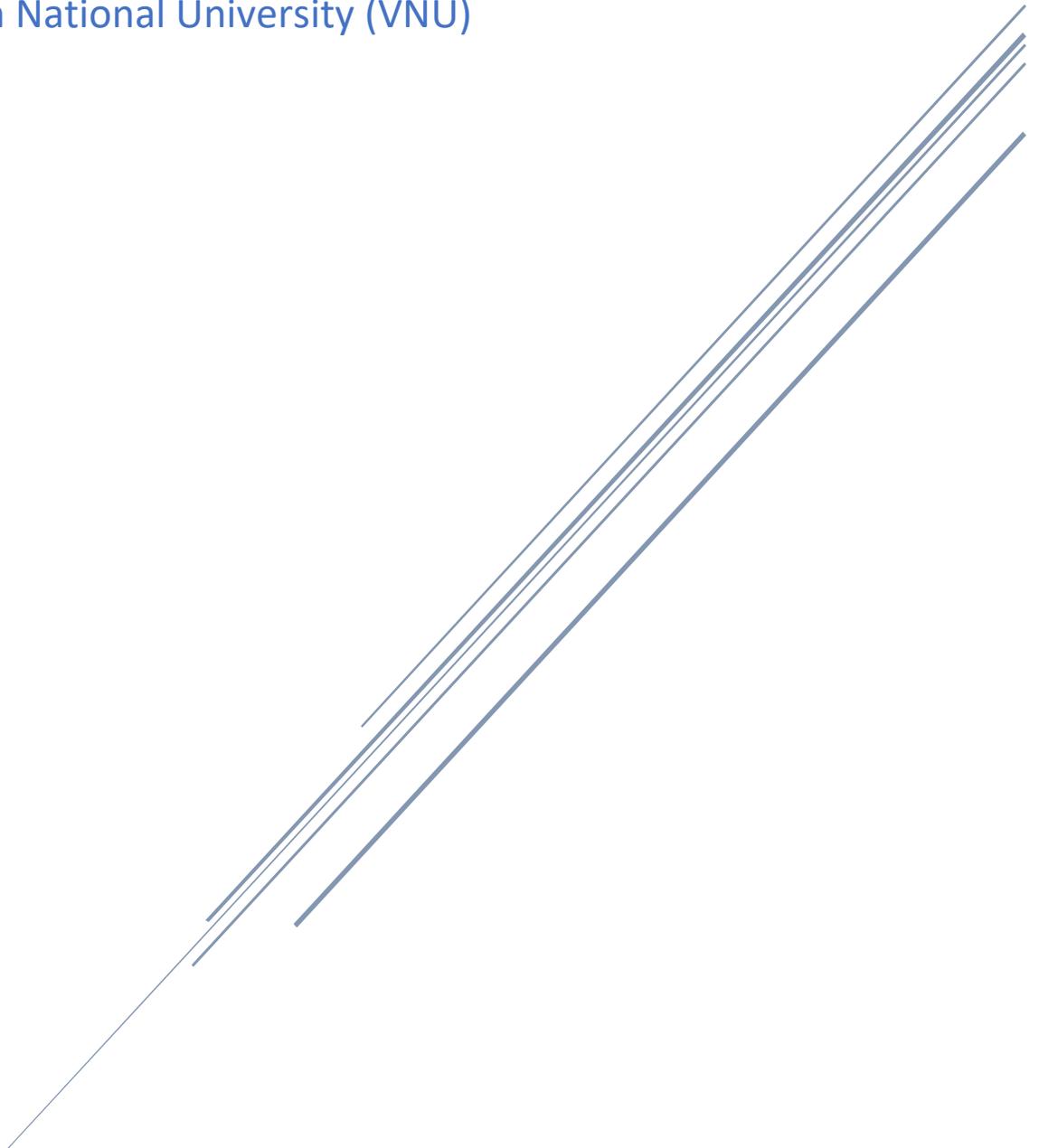


# OBJECTIVE 2 – QUALIFICATION BENCHMARKING

Bachelor of Business Data Analytics  
Vietnam National University (VNU)



## Table of Contents

Introduction .....	2
Design of the programme .....	2
Mode of Delivery .....	2
Learning and Teaching .....	3
Assessment and feedback.....	4
Conclusion and Recommendations .....	4

## Introduction

The Bachelor of Business Data Analytics (BDA) at Viet Nam National University provides fundamental concepts and applications of data analytics and how they can be applied to business, finance and economics. This is a multidisciplinary programme and for this benchmarking exercise we focus only on modules/courses related to data analytics.

For this benchmarking exercise we have developed a scoring matrix where we identified 5 themes (programming, knowledge management, knowledge abstraction, knowledge representation/communication and research/soft skills). **Programming** theme entails criteria related to design and development of not only software but also other artefacts like algorithms, network, IoT framework etc. The theme also includes the evaluation process and collaborative management of the artefacts. **Knowledge management** primarily focuses on processes and techniques of warehousing different types of data. The theme also includes security and privacy issues related to data management. **Knowledge abstraction** theme focuses on different data analytics and machine learning techniques applied to different types of data. **Knowledge representation/communication** theme includes different visualisation techniques used to represent the results (from database query through to data analytics to algorithm) to a wide range of stakeholders. **Research/Soft skills** theme focuses on the understanding and practice of research methods along with the ability to undertake team work and present results to a wider audience.

Within each theme, we have a set list of criteria against which each course is scored. The score is within the range of 50 – 100. 90 – 100 (fully meets the criteria); 75 – 89 (mostly meets the criteria); 60 – 74 (partially meets the criteria); 50 – 59 (barely meets the criteria). The marks are indeed subjective and therefore debatable. However, the pattern that emerges as result of the scoring of each module/course provides a holistic view on the programme and clearly identifies the areas of strengths and improvements.

## Design of the programme

1. This 135 credit programme has three specialisation pathways – developing analytics, finance analytics and market analytics. The programme starts with general knowledge (11 credits) that covers philosophy, politics and history of communist party followed by learning of English language. Area specific knowledge (23 credits) introduces students to basic concepts of data analytics and computer programming. This is followed by major knowledge (14 credits) in introductory economics, law, management courses. This multidisciplinary approach provides a broad-spectrum knowledge foundation for the students upon which they start to build specialisations. Major group knowledge (24 credits) courses provide further knowledge on management. Upon completion of these courses students focus on business data analytics (63 credits) courses that primarily focus on data analytics. Once a strong data analytics foundation is developed students can specialise in any of the following areas by taking intensive course group courses (15 credits). Finally, students are able to choose internship, thesis/courses (10 credits) to gain industrial and/or academic research experience.
2. For this benchmarking exercise only data/computer science related courses were evaluated. Economics, marketing, finance, and management related courses were not included.

## Mode of Delivery

3. All courses are delivered in English and have theory, practice and self-study credit hours. From the course structure document, we could not identify any course with allocated self-directed study time.
4. Most of the courses are theory based and as such assessments are exam/class test based.
5. There are some soft skill development focused courses like entrepreneurship, business organisation and management where both theoretical and practical aspects of soft and organisational skills are taught and experienced through case studies and group projects and presentations.
6. From the documents provided, it is not clear how the theory part of each course is delivered, however, from the feedback it was clarified that the lectures are delivered through presentations, discussions and group discussions. For some general courses like Philosophy, group discussions or case studies are more effective than lecture only.
7. For practical sessions, information regarding class size and available resources is necessary to evaluate the effectiveness of the practical sessions.

## Learning and Teaching

8. The programme offers a wide range of topics with its 72 courses/modules. This is primarily due to the pathways and specialisation options offered. However, delivering such a wide range of courses requires resources and may impact module quality. Therefore, combining some modules would benefit the students as well as staff, in-terms of resources and quality.
9. The programme provides an excellent foundation for mathematics (algebra etc.) and statistics. This is critical for data analysts of any type.
10. Data visualisation and communication is a big part of BDA (i.e. dashboard etc.), however there is the “DATA VISUALISATION AND ANALYTICS” course that addresses this critical aspect and “ENTERPRISE ANALYTICS” course some general aspects with tools like Tableau. Here it was expected that Google/Adobe Analytics platforms would be taught and used as the backbone of e-commerce courses.
11. The programme has several programming related courses with different programming languages – from Python, R to C++. This is a business focused programme and therefore students may not need such wide level of programming experience, especially learning object-oriented programming like C++ for programming and data structure.
12. Similarly, the programme has at least 12 courses related to theory/application of machine learning algorithms. Indeed, for a programme like BDA, understanding of algorithm is important, however algorithm optimisation, evaluation type of topics may not be required. With regard to the algorithms, Artificial Neural Network (ANN) is one of the widely used algorithm used in business and beyond. However, this programme only covers ANN within the Decision Support Systems and Advanced Data Analytics courses. Balancing the type and number of algorithms across the programme can make strategic contribution.
13. There are several courses that address different aspects of big data including the ethical aspects of big data, especially the “BIG DATA AND RESPONSIBILITY” course. This is an excellent feature of this programme. Current business-related big data also includes real-time data. Including the approach and processes of capturing and analysing these online big data at real-time would improve this programme.
14. Critical understanding about code sharing (github etc.) seems to be missing. For data science programme it is important that students are aware and have experience of code sharing, documentation and different licenses used for open-source software/algorithm development.

## Assessment and feedback

15. Well established assessment and feedback capture mechanism.
16. Student feedback is captured via an end of semester form. Feedback on four categories – module content, teaching activities, exams/assessment and facilities are captured via a 1 – 5 scale.

## Conclusion and Recommendations

17. Teaching modality
  - a. More discussion-based teaching approach including flip classroom type teaching model can be introduced to increase student engagement and self-directed study.
  - b. Project-based learning approach can be implemented to get more knowledge about different real-life projects, their shortcomings etc.
18. Teaching content
  - c. Low code/No code based programming are becoming popular (10.3390/electronics10101192) in universities with the rise of online education and as a result of COVID-19. Adaptation with new trends will help students to develop new applications/algorithms more easily. This impacts not only skill development but confidence also.
  - d. Analysis of real-life data from different domains (finance, healthcare, social media etc.) is essential to get understanding about different data sources and types.
  - e. Engagement with stakeholders and requirement capture is pivotal. Therefore, with different types of programming/machine learning courses these aspects need to be included.
  - f. Use of online content/courses can introduce students to new topics and choice of learning sources (in contrast to recommended book). This diversity of content and modality of delivery not only helps students to be in line with current trends but also initiates peer learning.
  - g. Skill development on code sharing (through github etc.) and open licence needs to be added to the course curriculum along with collaborative code development (e.g. Google Colab, AWS).
  - h. Basic understanding of how to protect intellectual property rights related to algorithms and the process of protecting these rights through third party.
  - i. Critical understanding of research methods in higher education and steps involved from idea generation through to publication and/or application can be incorporated.
  - j. Basic knowledge of social media-based profile creation e.g. LinkedIn profile that will facilitate future job prospects can be incorporated to develop profile.
19. Assessment
  - k. More emphasis on project based assessments (instead of exams) would help students to get experience of team work and other aspects of project management.

