Rees Jeffreys Road Fund Bursary – Report (September 2018)

Beneficiary: Dumitru Ceban

Academic year: 2017/18

Institution: University of the West of England (UWE), Bristol

Course: MSc Transport Engineering and Planning

Experiences on the course

Overall, my experience of this course has been positive. Although, at the beginning of the course it felt overly challenging, I quickly understood that the course is highly practical and it was in line with my plan to launch a career change. The experience of this course has exceeded my expectations in a positive way.

The course consisted of eight modules. The first, Travel Demand Analysis gave me the first exposure to a macro-modelling software tool called OMNITRANS used for the module assignment. This was very helpful since it offered a hands-on experience to assess strategic road networks using different development scenarios, including the use of the 4-stage model and trip matrices. This has proved useful over the year as it helped me to understand the principles that the SATURN model adopts, and thus this served as a good basis for my dissertation modelling exercise. We also undertook a very practical assignment assessing the capacity of the road network related to a housing development in East Cowes and the implementation of a bus rapid transit scheme. One of the important lessons for me has been the scale of impact of proposed development and efficacy of implementation of various mitigating transport policies.

Transport Economics – Although my background is civil engineering, I have been involved in several international projects where I have been responsible for assessing the economic viability of a roads proposed for improvement using “Highway Development Model 4” tool. The course helped me gain deeper understanding of the assignments and procedures I have previously undertaken. Additionally, I have not heard of transport elasticities before, which proved to be a very useful tool that can be applied extensively for assessing various dependences in the transportation sector, for instance, how the energy sector of fossil fuels can influence variation of national road transport demand. We also have been introduced to WebTAG which I consider very practical, objective and transparent guidance used for screening and detailed economic evaluation of a larger list of candidate projects.

Transport Management and Operations – this module engaged me in the analysis of two transport modes through a comparison of social, economic and environmental benefits for better understanding of how transport systems can be managed to deliver both sustainability and operational benefits. We have been asked to also look at the prospects that new technologies will change current constraints. This module enabled me to consider whether is it possible both to increase the sustainability performance of transport systems and at the same time expand transport activity. During this module I learnt about aviation and rail transport operations and how their environmental impact may be mitigated without reducing economic activity and whilst meeting social objectives. We have looked at the combined contributions of each mode as well as their intrinsic advantages and trade-offs. During this module we also had the opportunity to meet industry experts from aviation, freight and rail. A highlight was the field trip to Bristol airport. The visit offered the opportunity to see in reality some of the things that we were learning in theory.

Transport Infrastructure Engineering is the course that I really enjoyed. It focussed on many infrastructure engineering aspects, namely, identification of sources of information for design including specifications, standards, and site-specific parameters, feasibility studies and route alignment, calculation of road traffic noise, principles of geometric design and interactions between vehicles and the infrastructure amongst many others. During this course I have familiarised myself with the Design Manual for Roads and Bridges which is well-structured and straightforward to apply. Whilst writing the assignment for this module, I broadened my knowledge about design principles for cycle traffic and how to prepare a design portfolio that includes all key elements required for writing a proposal.

Traffic Engineering - this course gave me an opportunity to use three more pieces of transport software, namely Junctions 8.0, VISSIM and LinSig. This broadened my experience in terms of choice of different tools for better assessment of transport schemes: Junctions 8.0 is based on a deterministic approach for isolated priority junctions and roundabouts, Linsig is similarly a deterministic tool for isolated and linked sets of signal controlled junctions while VISSIM is a microsimulation tool for assessing groups of junctions in complex urban environment . This model also gave a good overview of UK traffic engineering approaches in terms of signal minima and maxima timings as well as testing the most efficient transport scheme in terms of network-wide performance indicators. The assignment carried out during this module gave me the opportunity to critically assess the benefits and shortcomings of the software and also enabled critical thinking concerning the choice of a specific junction configuration (priority versus roundabout versus signal control) whilst seeking to safely accommodate pedestrians and cyclists.

Changing Travel Behaviour was a topic that I found extremely interesting because it comprised of both psychology and engineering. As part of this module I have learnt theories about behaviour change relevant to moderating a traveller's attitudes and behaviours towards more sustainable transport and the associated techniques and measures for how to achieve that change. DfT's Behavioural Insights Toolkit was of a great support and provides practical guidance for reviewing and developing policy initiatives. The highlight was carrying out the assignment which consisted of writing a brief for a small-scale travel behaviour change trial that has to be realistic whilst allowing for the measurement of quantified outcomes. The assignment allowed me to gain experience in writing project proposals that may be used for applying for various funds and grants to further promote and develop behavioural change.

Transport Policy & Finance is the topic that was quite high level and tackled broad topics such as levels at which policy is made, the acceptability of policy and the differential implications policy has for the range of citizens and institutions as well as the implications of technological change. The assignment has offered me the opportunity to develop a critical analysis of the concept of sustainable transport through application to the current transport system. I felt this course challenged me most since many concepts were quite new for me.

Future career path

Looking to the future I want to get involved in more sustainable transport, with interests in autonomous and connected vehicles, more efficient asset management, transport planning and traffic engineering. I would like to work towards more sustainable transport in the UK over the next 20 years, since already at this stage the UK is making a stride towards higher levels of vehicle automation. Also, there are areas in the transport field in which there is space for improvement, with the largest being climate resilience and climate change.

So, I am seeking an initial role that will give me an opportunity to contribute to better transport planning and transport modelling for transport in the UK.