Nottingham Trent University
Course Specification

	Basic Course Information	
1.	Awarding Institution:	Nottingham Trent University
2.	School/Campus:	School of Science & Technology
3.	Final Award, Course Title and Modes of Study:	MSc Cloud and Enterprise Computing FT, SW or PT
4.	Normal Duration:	FT 1 year, SW 2 years, PT up to 2.5 years
5.	UCAS Code(s):	

6.	**Overview and general educational aims of the course**

The overall aim of the course is to provide you with a specialist Masters level education in the theory and practice of the design, development, and management of scalable Enterprise Information Systems (EIS) for medium and large-scale corporations. The course provides a broad education in the area of Internet and Cloud-based systems engineering and emphasizes the importance of student-centred learning, team building and problem solving skills.

An original feature of this course is that it combines the managerial and computing aspects of EIS. You will learn how to optimize the information flow between business processes and how to critically analyse the impact of deploying information systems within the Enterprise and in public Computing Clouds to support organisational and business processes. On the computing front, you will learn the principles and techniques necessary for designing, developing, and evaluating EIS that are distributed, interoperable, intelligent, and adaptive to change. In addition, the major project element of the course will allow you an opportunity to develop greater subject specialism in one specific Cloud or Enterprise computing topic of your choice. The programme will also provide you with the research skills necessary to keep up to date with the continually changing issues in the field such as the Semantic Web and Open Linked Data. Overall the programme will equip you to be an independent learner who can critically analyse the business requirements to engineer a comprehensive IT solution that strikes a sound balance between the financial constraints of the Enterprise and its demand for a scalable yet integrative IT infrastructure.

If you enrol into the sandwich (SW) mode of study, then you will have the option to apply for an industrial placement. If successful, then you undertake a one-year placement between the completion of the taught modules and the start of the project.

On completion of the programme you should automatically be able to seek employment in a variety of computing and IT related industries. In addition, you should be particularly attractive for corporations seeking to integrate their Enterprise-wide applications (EAI), automate Business to Business (B2B) relationships with other partners, or migrate their application services to scalable Cloud infrastructures. Alternatively, you would be fully equipped to embark on a computer science related PhD level research degree programme of study at any UK or EU university.

7.	**Course outcomes**
	Course outcomes describe what you should know and be able to do by the end of your course if you take advantage of the opportunities for learning that we provide.

Knowledge and understanding
By the end of the course you should be able to:

C1. Demonstrate an understanding of the use of advanced software frameworks for the integration of heterogeneous Enterprise applications and interfacing to legacy systems. **(B)**

C2. Use knowledge to investigate new and emerging technologies that optimise the deployment of enterprise-level computer applications and associated data-storage as services that can be cost-effectively deployed in scalable Cloud infrastructures. **(B)**

C3. Demonstrate an understanding of research methodologies and apply them to the utilisation of innovative semantic representation of knowledge for intelligent exploration of data.

C4. Be able to critically evaluate and manage the security risks of application services that are deployed within the enterprise and in external Cloud computing infrastructures.

C5. Use knowledge of the business workflow process to evaluate the strategic impact of IT investment on the enterprise's business-to-business and business-to-customer interaction. **(B)**

C6. Use appropriate methodologies to critically evaluate the existing technology infrastructure, costs, risks and business strategy to assess the viability of Cloud services for businesses. **(B)**

C7. Critically assess the role of leadership in project management to achieve entrepreneurial business.

Skills, qualities and attributes
By the end of the course you should be able to:

C8. Be innovative in the use of a broad range of distributed and Internet programming principles as applied in Enterprise application integration and Enterprise resource planning. **(B)**

C9. Synthesise and critically appraise ideas from a wide variety of sources.

C10. Be systematic and efficient in planning and managing the migration of application services to Cloud infrastructures. **(B)**

C11. Communicate ideas, concepts, plans and designs; using a variety of approaches including writing, oral and computer based presentations.

C12. Undertake technical roles within a team and exercise leadership. **(B)**

C13. Learn independently to expand on the knowledge and understanding developed during the course.

(B) *indicates that the outcome has been mapped to the Computing benchmark standards*
http://www.qaa.ac.uk/Publications/InformationAndGuidance/Documents/QAA386_Computing.pdf

The Computing benchmark standards provide a national framework for describing the content and standards of a Master's degree in Computing disciplines.

8.	**Teaching and Learning Methods**

In planning the course, we have used an outcome-based approach, which incorporates the experience that has been developed in the School over a number of years based on feedback, review and reflection. The purpose is to create a student centred learning environment and teaching and learning methods are selected to facilitate student engagement in activities that are appropriate to the outcomes.

Reflecting the relative maturity of postgraduate students, your teaching and learning is designed to enable independent learning. The majority of taught modules will be centred on lectures supported by seminars, workshops and laboratories to provide a significant knowledge resource. You will be able to apply this knowledge through case study and project work either at the University or away from the University.

The teaching methods include:

- lectures to introduce and develop concepts and to explore the application of these concepts;
- specialist laboratories to develop skills and appreciate concepts;
- seminars to provide academic support;
- case study and project work to develop a deeper understanding of concepts and applications.

Comprehensive teaching material will be available to support the learning process utilising the World Wide Web and e-learning where applicable. Such teaching material will typically comprise of written information, recommended reading, tutorial questions, self-assessment tests and computer based learning and teaching instructions. It is a normal practice of the School to invite external professional staff to contribute to learning material and to give lectures on a 'visiting faculty' basis. The web and the University's own Virtual Learning Portal NOW will also be used for communication between students and staff.

You will also take the Research Methods module in order to enhance your independent learning and research skills.

The major project module will integrate the knowledge base of the taught modules to enable individual development of highly specialised knowledge and research skills.

If you are an international student where English is not your first language, language support will be provided where appropriate by the School to enhance your learning experience and to improve your presentation skills. If necessary, you may be required to attend advanced English language classes as a supplementary module.

9.	**Assessment Methods**

The taught part of this course is entirely assessed by coursework. Most course works require you to undertake practical work together with research and critical evaluation. You will then have to hand in the practical work that you have created together with a written report that demonstrates the link between theory and practice. The Research Methods module is based on reports and oral presentations of work that is done.

Laboratory sessions and workshops are used to test a range of practical skills and those outcomes associated with hypothesis testing, data capture and interpretation. Typical assessments include coursework reports and presentations.

During the Major Project, you will be required to undertake a major piece of practical work. This then forms the basis of a dissertation. Finally you will have to attend a viva voce where you will discuss the project with a small panel of lectures.

The assessment schedule of the course is summarised in the following table.

Module Title	Credit Points/ Status	Assessment	
		Type	Details
Advanced Software Engineering	20 / core	100% Coursework	Written assignments on Object-Oriented Analysis & Design Advanced SW development assignment for a real-life use-case
Entrepreneurial Leadership & Project Management	20 / core	100% Coursework	Written assignment focusing on an SME exploring potential business opportunities overseas
Service-Oriented Cloud Technologies	20 / core	100% Coursework	SW architecture and development of a service-centric client/server Research report investigating the use of Cloud and Semantic web technologies for a real-life use case
Enterprise & Cloud Systems Management	20 / core	100% Coursework	Written assignment analysing the management challenges and economic benefit of migrating the service-centric solutions to a Cloud-hosted environment
Network and Cloud Security	20 / core	100% Coursework	Written report addressing a network security problem for a specific use-case based on investigation of literature
Research Methods	20 / core	100% Coursework	A literature survey investigating existing solutions and relevant publications for a specific research problem A project definition form to be handed in as a written report, detailing the proposal for the Major Project and its SW/HW requirements
Major Project	60 / core	100% Coursework	Produce a written dissertation that describes, discusses, evaluates and analyses the outcome of your investigation and technical development. You will also be required to present what you have achieved via a mixture of viva voce and formal presentation.

Assessment of the optional industrial placement is defined in the specification for the Placement Diploma (or Certificate) of Industrial Studies.

10.	**Course structure and curriculum**

The course is studied on a one-year full-time basis. We have chosen the modules so that the course outcomes are developed. What we term a 'Curriculum Map' is available should you wish to see how the course outcomes and modules interrelate. The course leader will advise you on selection of modules.

Full-Time and Sandwich modes:

Weeks 1-10

- Advanced Software Eng (20 credits)
- Entrepreneurial Leadership & Project Management (20 credits)

Weeks 11-30 (study 4 modules)

- Service-Oriented Cloud Technologies (20 credits)
- Enterprise & Cloud Systems Management (20 credits)
- Network and Cloud Security (20 credits)
- Research Methods (20 credits)

* At this point, sandwich students successful of securing a placement position undertake a one-year work placement before returning the following year to start the major project.

Weeks 31-45

- Major Project (60 credits)

Part-Time mode of study:

In part time mode students will take half of the taught modules in year one and the other half in year two. Modules must be taken at the times that they are delivered to full time students, and it is important that the Research Methods module is delivered before students undertake their major project. Advanced Software Engineering is a pre-requisite for other modules and so must be taken in the first half of the first year. It follows that Internet Programming must be taken in the first half of the second year. Other than that, the order in which the modules are taken may be chosen to meet individual student needs. An example programme is given below.

 Year 1

Weeks 1-10

- Advanced Software Engineering (20 credits)

Weeks 11-30

- Network and Cloud Security (20 credits)
- Enterprise & Cloud Systems Management (20 credits)

Year 2

Weeks 1-10

- Internet programming (20 credits)

Weeks 11-30

- Service-Oriented Cloud Technologies (20 credits)
- Research Methods (20 credits)

To be taken over 30 weeks during the programme

- Major Project (60 credits)

11.	**Admission to the course**

For admission to the course, you should have an honours degree or equivalent in Computer Science or Computing related subject.

If you are a mature candidate without a degree but with equivalent academic achievement and substantial industrial experience, you are welcomed to apply. You will normally be expected to provide a portfolio of accredited supporting evidence and to attend an interview, where appropriate.

Selection is by application form, supported by documentary evidence of academic qualifications/attainments and references.

For international students

If you are an international student, where English is not your first language, you will need to have an English language qualification, normally IELTS 6.5 , TOEFL 550, or CBTOEFL 213.

This requirement may be waived if you can demonstrate language skills that indicate you have the potential to succeed on the programme.

If you are already studying in the UK, assessment may be based on the outcomes of an interview.

Applicants who have successfully completed the postgraduate diploma course in computing run by the Nottingham Trent International College will be eligible for entry to these courses.

12.	**Support for Learning**

There is an induction programme (including IT and Library use) and you will receive a course handbook that provides all the essential information about the course and the support we provide for your learning.

Staff teaching on the programme are members of professional institutions including British Computer Society (BCS) and Institution of Electrical and Electronics Engineers (IEEE). All staff are active researchers; many undertake industrial consultancy.

The course leader, who is responsible for the day-to-day operation of the course, oversees all students enrolled on the course. Additionally, you will be allocated a Personal Tutor who is accessible by you on an individual basis throughout your time on the course.

The University's own e-learning environment (NOW) is used to support student learning activities.

The library and other learning resources (equipment/IT) are continually updated to ensure they are fit for purpose.

The University central student Support Services offers a range of general, specialist and professional support services for students.

For students hoping to take a placement, support and advice is available from the School's Placement Office.

13.	**Graduate destinations / employability**
	There is a wide range of career opportunities in the Computing & IT sector and related industries. The School of Science and Technology at Nottingham Trent University has an enviable graduate recruitment record. If you choose to work in the areas related to the subject discipline studied, we have an excellent employment record.
	Some graduates choose to venture into other sectors and are equally successful in gaining employment because of the transferable skills gained on the programme. Other graduates go on to study for a PhD.
	The University Careers Service is available to all students, offering individual consultation.

14.	**Course standards and quality**
	A course committee monitors student feedback on module delivery.
	- You will be given feedback on all assessed work.
	- There is one External Examiner, who submits an annual report on the standards and quality of the programme.
	- The subject benchmarks of the Quality Assurance Agency have been incorporated into the course's learning outcomes.
	- The University was the subject of a successful institutional audit by the Quality Assurance Agency in October 2010 – the report is available here http://www.qaa.ac.uk/InstitutionReports/Pages/Nottingham-Trent.aspx

15.	**Assessment regulations**
	This course is subject to the University's Common Assessment Regulations (located in its Academic Standards and Quality Handbook). Any course specific assessment features are described below:
	There are no course specific exceptions from the University regulations.

16.	**Additional Information**	
	Collaborative partner(s):	**None**
	Course referenced to national QAA Benchmark Statements – indicated by **(B)** in section 7- the course outcome:	**Computing (2011)**
	Course recognised by:	**n/a**
	Date implemented:	**November 2013**
	Any additional information:	
	None	