

BC ITVERSITY NPC

Faculty of Information Technology

Lecturer: Programming/Software Engineering

Job Profiles

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1 Job Description

1.1 Job Title

Lecturer – Programming/Software Engineering (L/PSE)

1.2 Job Overview

The L/PSE's role at BC ITversity is to make a significant contribution in the domain of Programming/Software Engineering (PSE), i.e.:

- The successful development of the educational design, i.e. curriculum and learning design, and curriculum delivery, i.e. teaching, learning support, advice and guidance, coaching, mentorship, peer and collaborative learning, feedback and assessment, personal development and planning and tutoring, skills development, and access to resources, in the domain of Programming/Software Engineering (PSE).
- The enhancement of BC ITversity's performance in innovation and knowledge valorisation by conducting activities with impact and profile, influencing leading edge practice.

In depth understanding of the underlying principles of programming foundational structures, such as class formation and representation. Entity and abstract modelling. The ability to know what to look for in a programming language irrespective of the language syntax. Understand what language focus areas are and what the trends are within various programming domains, such as web frameworks within web development, virtualised machines to enable cross platform execution of code. Where is software heading, and why.

The L/PSE reports to the Assistant Dean Academic Affairs and Compliance and works with the Dean and all other Assistant Deans to ensure the efficient and effective delivery of teaching programmes, student support and policy support and innovation in conformance with BC ITversity's strategy, policies and procedures.

This includes associated operational administration, including accreditation by relevant regulatory agencies; quality management and enhancement; health and safety and other organisation related duties and responsibilities. The latter may include from time to time duties and responsibilities which are necessary for the effective performance of the organisation's business without altering the nature or level of responsibility involved.

1.3 Duties & Responsibilities

The job duties and responsibilities listed below are intended to describe the general nature of the role. BC ITversity recognises that one will not be expected to undertake the full range of responsibilities detailed under each heading and you may be directed to concentrate on particular areas. Likewise, there is no guarantee that one will be given the opportunity to carry out all the activities listed below. However, there is an expectation that academic staff will undertake a broad range of responsibilities across several of the areas outlined above.

The SL/SE's main duties and responsibilities include the following:

- *Core duties and responsibilities* - Learning and teaching; scholarship, innovation and knowledge valorisation; mentoring, coaching and pastoral care; educational design.
- *General duties and responsibilities*- Quality assurance and enhancement; health & safety requirements; organisation-related duties and responsibilities.

In terms of career development, jobholders should note that there may not be an immediate requirement to carry out all the activities listed below. BC ITversity embraces a developmental approach, based on a

continuum of increasing expertise. Therefore, the duties and responsibilities and the balance between the elements in the role may change or vary over time depending on the specific needs at a specific point in time, career development or due to changing needs in the department/group.

With reasonable notice and support, BC ITiversity can expect and require a member of staff at this level to undertake any of the activities detailed below. One will be expected to perform at this level within a reasonable period following promotion.

Job descriptions are not exhaustive and one may be required to undertake other duties of a similar level and responsibility.

A detailed statement of current responsibilities and powers is given in the document "Organization & Management / Schedule of responsibilities and powers" of the Quality Management System (QMS).

1.3.1 Core duties and responsibilities

1.3.1.1 *Learning and teaching*

- Ensure that students are provided with a relevant and stimulating range of learning opportunities and experiences within the subject area, in conformance to their overall objectives.
- Ensure that educational design and program delivery comply with the quality standards and regulations of the organisation.
- Responsible for managing taught programmes, including oversight of day to day operational processes (e.g. timetabling, assessment, examination systems) and programme accreditation processes.
- Undertake such teaching duties as are required by, and agreed with, the Faculty of Information Technology (FIT), including standardised classes, guest/master classes, international classes, and extra/non-standard classes for students at risk.
- Keep abreast of international developments within the academic discipline and/or professional practice of the Subject area, and to share this knowledge to shape curricular content, design and delivery.
- Develop and apply innovative and appropriate teaching techniques and material which create interest, understanding and enthusiasm amongst students.
- Set, mark and assess work and provide feedback to students, including invigilation and moderation of both formative and summative assessments (examinations).
- Supervise student projects, students on field trips and, where appropriate, on placements.
- Ensure that student progress is regularly monitored and that the results of monitoring are reported in a timely fashion and provide advice and guidance to personal tutors and students as appropriate.
- Participate in BC ITiversity's wide staff development initiatives related to learning and teaching and contribute to the development of learning and teaching strategies.
- Participate in student support on academic, career and personal development matters.
- Contribute to the development of academic processes across the institution.

1.3.1.2 *Scholarship, innovation and knowledge valorisation*

- Engage, individually or in collaboration with others, in scholarly and research-related activity, innovation and/or knowledge valorisation, subject to the approval of the FIT, i.e. knowledge generation, knowledge exchange and knowledge transfer activities.

- Be aware and informed of developments in higher education relevant to the development of learning and teaching and research strategies within the Faculty and BC ITversity.
- Engage with other researchers internally, nationally and internationally, and to contribute to the research objectives of both the Faculty's curriculum innovation program and, where possible, the organisation's research centre, i.e. Bothale Village, and its thematic research topics.
- Identify sources of funding and contribute to the process of securing funds for own research or scholarly projects.
- Apply for external knowledge valorisation funding and to produce high quality outputs for the 'Research Excellence Framework'.
- Lead collaborative knowledge valorisation and/or enterprise activity producing high quality outputs with demonstrable impact, in particular influencing leading edge practice.
- Engage in subject and professional research and pedagogy development as required to support teaching activities.
- Extend, transform and apply knowledge acquired from scholarship to teaching, research and appropriate external activities.
- Be an active and recognised contributor to subject associations, learned societies and relevant professional bodies.

1.3.1.3 Mentoring, coaching and pastoral care

- Advise, mentor and support less experienced colleagues and coach on personal development.
- Supervise the work of others, for example in research teams, projects or postgraduate study.
- Undertake personal tutoring, i.e. act as a personal tutor and, where required, ensure that the Personal Tutor and attendance monitoring systems are working effectively across a level of study.
- Oversee the monitoring of student progress and provide advice and guidance to personal tutors and students as appropriate, including oversight of the needs of students with special requirements and processes pertaining to mitigating circumstances.
- Appreciate the needs of individual students and their circumstances and assist them in accessing support services.
- Deal with referred issues for students on own programmes and provide first line support for colleagues dealing with student matters, referring them to sources of further help if required.

1.3.1.4 Educational design

- Develop and sustain a subject contribution of relevance and high quality to the different educational programmes, including:
 - Assisting in the educational design, i.e. curriculum and learning design and delivery of the curriculum.
 - Achieving a reputation for excellence in the teaching of the subject.
- Develop and produce appropriate learning materials on the basis of scholarly and research activity.
- Co-ordinate the work of colleagues to identify and respond to students' needs.
- Be responsible for the design and delivery of own modules and assessment methods.

- Collaborate with colleagues on the implementation of assessment procedures and to review student progress and retention.
- Tackle issues affecting the quality of delivery within scope of own level of responsibility, referring more serious matters to others, as appropriate.

1.3.1.5 Management of faculty and resources

- As academic leader with in depth knowledge of a relevant field of specialisation, ensure constant liaison with colleagues in related fields to always see the bigger picture through the integration and convergence of technologies.
- Provide academic leadership to those working within programme areas, for example by agreeing work plans to ensure that programmes are delivered effectively or organising the work of a team by agreeing objectives and work plans.
- Contribute to the development of teams and individuals through the individual performance review process and providing advice on personal development.
- Manage and support colleagues with less experience and facilitate their academic and personal development.
- Contribute to the recruitment and selection of students, both South African/African and International, and to plan for the recruitment of students, including attendance at open days and other recruitment and marketing events.
- Contribute to the overall management of the Faculty in areas such as resource management, business and programme planning by undertaking specific leadership roles in the Faculty/Department, e.g. Program Coordinator, and/or line management responsibilities as required and contributing to institutional committees and work sessions.
- Be responsible for setting standards and monitoring progress against agreed criteria for area of responsibility.
- Be involved in Faculty level strategic planning and contribute to the organisation's strategic planning process.
- Plan and deliver consultancy or similar programmes and ensure that resources are available.

1.3.1.6 Outreach, liaison and networking

- Represent the Faculty in external relations as required.
- Lead and develop internal networks, for example by chairing and participating in University committees or working groups.
- Act as an external examiner to other institutions and provide professional advice as appropriate.
- Lead and develop external networks, for example with external examiners and assessors.
- Develop links with external contacts such as other educational bodies, employers and professional bodies to foster collaboration.
- Participate in and develop external networks, for example to identify sources of funding, contribute to student recruitment, secure student placements, market the institution, facilitate outreach work, generate income, obtain consultancy projects, or build relationships for future activities.

- Undertake international visits in order to establish partnerships, teach at partner institutions or act as Link-Tutor.
- Actively collaborate within the organisation and externally on relevant innovation and knowledge valorisation projects.

1.3.1.7 Academic administration

- Be responsible for quality, audit and other external assessments in own areas of responsibility.
- Take responsibility for programme accreditation processes.
- Ensure that operational processes such as timetabling, assessment and examinations are managed.

1.3.2 General duties and responsibilities

1.3.2.1 Quality assurance and enhancement

The following duties and responsibilities are related to supporting and enhancing the Quality Management System (QMS):

- Be committed to and play a significant part in the total quality management of the subject area.
- Participate in assessment and evaluation of curriculum design and the quality of learning and teaching provided by subject staff.
- Make contributions of appropriate quality to awards being prepared for review and/or validation.
- Ensure adherence to, and effective operation of quality assurance and enhancement policies and processes.

1.3.2.2 Health and safety requirements

The following duties and responsibilities are related to health and safety:

- Comply with safe systems of work in operation within your work area.
- Work co-operatively with other staff who have responsibility for health and safety requirements.
- Report any health and safety concerns to a senior manager or other responsible member of staff as soon as these are identified.
- Attend training as appropriate to the role (see the relevant health and safety training grid for requirements).
- Undertake duties as a first aider as required.
- Have a direct responsibility to ensure a safe and healthy environment for students under one's supervision, by ensuring that:
 - o BC ITversity's safety policies and requirements are implemented.
 - o That risk assessments are completed for relevant activities (e.g. fieldwork, performances, exhibitions etc.) undertaken by students under one's supervision, and that any resulting actions are taken and that safe working practices are followed.
 - o Correct and timely communication of safety issues both to superiors and students as relevant to the areas of responsibility is carried out.

- Work within a framework of effective governance, ensuring compliance with relevant regulations, legislation, policies and procedures.
- Students under one’s supervision fulfil their responsibilities under BC ITiversity’s Health and Safety Policy.

1.3.2.3 Organisation-related duties and responsibilities

- Develop ideas for generating income.
- Attend training courses as identified and agreed for appropriate development.
- Work within and actively support BC ITiversity’s core values, e.g. the equality and diversity policies and practices of BC ITiversity.
- Build clear and effective lines of communication within the Subject area.
- Notify a more senior member of staff of any errors or concerns at the earliest opportunity.
- Participate in the annual ‘Performance Development Review process’.
- Ensure that the university’s cross-cutting themes of partnership, equality and diversity and sustainability inform all activity related to the role.
- Ensure communications systems and practices support effective management arrangements and promote good relations with staff and students.
- Be responsible for one’s own continuing self-development.
- Undertake other duties not specifically stated above, which from time to time are necessary for the effective performance of the organisation’s business without altering the nature or level of responsibility involved.

2 Core Skills and Knowledge for Employment

2.1.1 Educational background and qualification(s)

Essential requirement	Desirable requirement
- MSc in relevant field or equivalent professional experience.	- Completed pedagogical courses for higher education or equivalent experience.
- Graduate degree in relevant discipline	- Candidates with an MSc degree will be considered for this Lecturer position. Candidates with Honours Degree and registered for Master’s Degree will also be considered.
	- Membership of professional body, e.g. IEEE South Africa – Computer Society; IACIS (International Association for Computer Information Systems); IITPSA (Institute of Information Technology Professionals South Africa); ITA (The Information Technology Association of South Africa); ACE – ACET (Association of Computer Engineers and the

	Association of Computer Engineers and Technicians).
	- Higher education teaching qualification or professional recognition, e.g. AWS Certification (Solutions Architect, Developer, SysOps Administrator, Cloud Practitioner), MCSO (Microsoft Certified Software Developer).

2.1.2 Experience and knowledge

Essential requirement	Desirable requirement
<ul style="list-style-type: none"> - Depth or breath of specialist knowledge demonstrated by a master's level qualification, usually an MSc in order to teach and support learning on academic modules. 	<ul style="list-style-type: none"> - External recognition as a scholar, teacher and/or practice based professional. - Experience of teaching within an international context.
<ul style="list-style-type: none"> - A comprehensive and up-to-date knowledge of the subject area and in depth understanding of own specialism to enable the development of new knowledge and understanding within the field. - A thorough understanding of programming, including pure programming, software engineering, web programming and software processes. 	<ul style="list-style-type: none"> - <i>Pure Programming:</i> computer science fundamentals, including object-orientated design and data structures and algorithms. Programming, including built-in and abstract data types, parameterised methods, enumeration, collections, procedures, application programming interfaces, and libraries. Object-orientated programming, including classes, objects, methods, messages, classification, generalization, specialization, inheritance, interfaces, inner classes, polymorphism, abstraction, events, delegates, concurrency and exception handling. Programming, including advanced file I/O, advanced ADO.NET application and version control with Git. - <i>Web Programming:</i> web concepts, standards and protocols; web servers, core configuration directives; HTTP content negotiation; creating and managing virtual hosts; principles of good UI web design; integrated development environments; document structure and content-integration; layouts and formatting; design and implementation; validation and deploying a website. Web programming, including use of variables, decision constructs and looping structures; object representation of data; functional

	<p>programming and libraries to extend web applications.</p> <p>Architecture of a web framework; installing and configuring dependencies; concepts of directives and data binding within a framework; fundamentals of routing and navigation within a framework; integrating APIs; integrating external libraries.</p> <ul style="list-style-type: none"> - <i>Software Engineering</i>: software engineering, including: <ul style="list-style-type: none"> Software development lifecycle; modelling, abstraction, standards, and specification; systems and architecture; layering and separation of concern. Application layering; the data layer; databases; data topologies; relational databases; data normalisation (0NF, 1NF, 2NF, 3NF, 3½NF); distributed heterogeneous data stores; transactions; database integrity rules; logs and journals; coordinators and participants. Data access layer, data access technologies, data providers, dataset components; the user interface layer, graphical user interfaces, data binding in UI components, rich vs. thin clients, interfaces and channels. Business logic, business rules, inference engines, backward vs. forward chaining, workflow management, state machines, code-based vs. data-based specification, tight binding and loose coupling for reusability. Concurrency and consensus; thread-safe programming; distributed applications. Linear data structures (stacks, queues, lists). Non-linear data structures, associative arrays (dictionaries, hash maps, graphs, trees, tries, priority queues). Ordered data structures (binary trees, heaps); specialised data structures (sets, bags). - <i>Software Process</i>: a thorough understanding of systems analysis and design, including identification of opportunities for IT-enabled organisational change; structuring of IT-based opportunities into projects; analysis and specification of system requirements; approaches to systems analysis & design; approaches to implementing information systems and implementation alternatives.
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	<p>Software testing, including testing in the software life cycle; static Testing and static analysis tools; dynamic analysis and test design techniques; test management and testing tools.</p> <p>User experience design, including fundamentals, principles, and elements of User Experience; techniques for examining the user experience and exploring the context of use; usability and user experience goals; interaction design in and for different users and cultures; capturing and representing user characteristics; product objectives and user needs; functional specifications and content requirements; designing accessible interactive systems; process of interaction design; prototyping and approaches to evaluation of user interfaces.</p>
<ul style="list-style-type: none"> - An on-going and demonstrable commitment to scholarship, innovation and/or knowledge valorisation. 	<ul style="list-style-type: none"> - A thorough understanding of academic writing, including academic convention, criteria for selecting a credible source, academic integrity, referencing, citing, paraphrasing, quoting, summarising, tone, grammar, vocabulary, organise your text coherently following international standards, proofreading, editing, writing your abstract, academic writing principles in writing essays, theses, reports and proposals. - A thorough understanding of research methods, including formalities, psychology, ethics and philosophy; process and designs; literature review, citation and referencing; methodologies; reporting results and presentation techniques. - A published record in either funded research and/or practice and a previous submission of a project proposal.
<ul style="list-style-type: none"> - Substantial experience of teaching within higher education environment or equivalent related industrial experience. 	<ul style="list-style-type: none"> - Established track record of successful generation of funded knowledge valorisation activities as appropriate to the discipline.
<ul style="list-style-type: none"> - Up-to-date knowledge of higher education and ability to use a range of delivery techniques to enthuse and engage students. 	<ul style="list-style-type: none"> - Experience of collaborative provision.
<ul style="list-style-type: none"> - Understanding of importance of income generation, particularly via successful student recruitment and open to opportunities to increase income. 	

- Understanding of quality issues and requirements in higher education.	- Experience in developing and implementing educational design and related quality management and enhancement issues in a Higher Education environment.
- An up-to-date knowledge and understanding of changing trends and requirements in the subjects' industrial and professional domains	- Industrial experience in the subject area; where it can be demonstrated that equivalent core knowledge has been gained from practice a PhD will be desirable.
- High quality and current connections with industry and professional practice.	

2.1.3 Employability skills

2.1.3.1 Skill cluster – Navigate the world of work

Essential requirement	Desirable requirement
- Able to demonstrate independent and self-managing work styles, e.g. having a personal vision and goals, including knowledge and confidence in own ideas and visions; evaluating and monitoring own performance; taking responsibility.	
- Desire and willingness to maintain required professional standing through professional practice and continuing professional development, e.g. managing own continuous learning using a range of media to learn applied to 'technical' as well as 'people' issues; willing to learn in any setting, i.e. on and off the job; open to new ideas and techniques	- Ambitious to achieve national and international excellence.

2.1.3.2 Skill cluster – Interact with others

Essential requirement	Desirable requirement
- Demonstrate strong student-centric approach to ways of working and commitment to high quality standards.	
- Excellent interpersonal skills in working as a member of a team or with other colleagues, students or other stakeholders.	

<ul style="list-style-type: none"> - Excellent communication skills and style, contributing to productive and harmonious relations across internal and external stakeholders, i.e. verbal, written communication skills and presentation skills. 	<ul style="list-style-type: none"> - A thorough understanding of English communication, including grammar and grammatical structures; verbal English communication; non-verbal English communication; professional emails; office etiquette; office politics; presentations, reports and proposals. - Able to speak and write in other languages than English.
<ul style="list-style-type: none"> - Able to communicate complex and conceptual ideas to a range of groups. 	
<ul style="list-style-type: none"> - Evidence of networking and positive working relationships both within and outside the organisation with appropriate academic and non-academic partners, e.g. community and business. 	
<ul style="list-style-type: none"> - Constructive approach to team working, contributing to productive working relationships and outcomes; knowing how to define a role as part of a team; identifying the strengths of the team members. 	<ul style="list-style-type: none"> - Able to work across different ages irrespective of gender, race, religion or political persuasion.
<ul style="list-style-type: none"> - Excellent coaching and mentoring skills, including giving feedback. 	

2.1.3.3 Skill cluster – Get the work done

Essential requirement	Desirable requirement
<ul style="list-style-type: none"> - Receptive and responsive to change. 	
<ul style="list-style-type: none"> - A strategic thinker; ability to articulate a (research) strategy, vision and mission for development, implementation and delivery of successful education, problem solving and/or knowledge valorisation activities. 	
<ul style="list-style-type: none"> - Dedication to the development of the subject, including a progressive and dynamic approach to teaching in Higher Education. 	
<ul style="list-style-type: none"> - Showing independence and initiative in identifying problems and solving them. 	
<ul style="list-style-type: none"> - Able to develop creative, innovative and/or practical solutions. 	

- Able to plan and prioritise workload and that of others establishing clear goals and deliverables.	- Experience in continuous improvement and planning processes.
- Able to collect, analyse and organise information.	- Evidence of fact-driven problem solving and decision-making using analytics taking the context of data and circumstances into account.
- Experience in managing a team and/or functions in a busy environment with conflicting priorities.	- Experience of managing research/innovation projects, teams, and preferably experience of acting as a principal investigator.

3 BC ITversity’s Participative Development Model of Education

Belgium Campus ITversity’s governance framework, laid down in its Participative Development Model of Education, serves as the blueprint for its engagement with its internal stakeholders, i.e. students and staff, and external stakeholders, i.e. academia, industry, community and government. In this model all stakeholders participate and jointly embrace the responsibility to develop and deliver curricula that target the needs of the region and contribute to the positive and sustainable development of society. At the same time, the unique and diverse needs of the individual stakeholders are addressed to ensure that the university delivers benefits to all these parties. BC ITversity is committed to the equality of opportunities and to advancing the careers of all staff.

3.1 Workplace support

BC ITversity’s Participative Development Model of Education embraces an approach that support individuals to understand the requirements of their workplace and the role and to develop the knowledge and skills necessary for effective performance in that context. This includes formal and informal processes such as inductions, supervision, mentoring, peer support, performance discussions and provision of opportunities for experience, reflection and learning.

3.2 Culture and values

3.2.1 Personal attributes

BC ITversity’s Participative Development Model of Education challenges and values those individual values and attributes which determine the ability of an individual to demonstrate and develop the behaviours required for success in work, such as loyalty, reliability, common sense, motivation, ability to deal with pressure, commitment, enthusiasm, positive self-esteem, adaptability, a balanced attitude to work and home life, honesty and integrity, personal presentation, sense of humour.

3.2.2 Workplace culture and values

The principles of BC ITversity’s Participative Development Model of Education are pursued in the spirit of the ideals formulated as the organisation’s core values: excellence; intellectual freedom and discovery; educated and responsible citizenship; community-based outreach and partnership; inclusiveness and diversity; ethical governance, integrity and trustworthy citizenship; responsibility and accountability; highly skilled employees collegiality; co-creative enterprise; cultural competence; safety, health and sustainability.

These workplace culture and values explicitly laid down in BC ITversity’s codes of conduct and workplace policies as well as implicitly reflected in the accepted behaviour, reward system and power structures of the workplace.

3.3 External factors

BC ITiversity explicitly values external factors which determine an individual's ability to gain and maintain employment, such as health, transport, housing arrangements, family responsibilities, social networks and other personal circumstances.

4 Additional Information

Candidates must be able to demonstrate their eligibility to work in South Africa in accordance with the Immigration Act, 2002 (Act No. 13 of 2002) as amended. Where applicable, this will include a Critical Skill Permit or a General Work Permit. BC ITiversity will provide a Certificate of Sponsorship if required by a successful candidate.