



**BSc in Software Engineering**  
( See Sheet2 for a list of acronyms of courses )

Areas and topics	Courses	Core Courses (Modules, Subjects)																Elective Courses						Total										
		MA1	MA2	IPR	PL	OOP	DS	IM	PS	ADS	CA	ISE	SWR	SWD	SWQ	SWC	SWA	DMT	HCI	IT	MA3	LSD	TD		OS	CN	SV	SWS	IP	CG				
PM2. Public sector and tax system							2																								2			
PM3. Consumer behaviour							2	2																							4			
PM4. Production, expenses and income of a firm							2																								2			
PM5. Price-forming of manufacturing factors							2																								2			
PM6. Economic cycle							3																								3			
PM7. Company information systems							3																								3			
PM8. Marketing systems							3																								3			
PM9. Investment and crediting systems							3																								3			
PM10. Finance and accountancy systems							3																								3			
<b><u>SP. Social &amp; Professional Issues</u></b>																																		
SP1. History of computing								2																								2		
SP2. Social context of computing								2															3									5		
SP3. Methods and tools of analysis								2																								2		
SP4. Language, communication, interaction								2																								2		
SP5. Professional and ethical responsibilities																							4									4		
SP6. Risks and liabilities of computer-based systems																							4									4		
SP7. Intellectual property																		4					3									7		
SP8. Privacy and civil liberties								2										2					2									6		
SP9. Computer crime																							4									4		
<b><u>AC. Algorithms, Data Structures &amp; Complexity Analysis</u></b>																																		
AC1. Basic algorithmic analysis																																	4	
AC2. Algorithmic strategies																																	4	
AC3. Fundamental computing algorithms																																	6	
AC4. Automata theory							4																	4									8	
AC5. Basic data structures																																	6	
AC6. Abstract data types							4																										8	
AC7. Advanced non-linear structures							4																										10	
AC8. Geometric modelling																														4			4	
AC9. Basic rendering																														4			4	
AC10. Computer animation																														3			3	
<b><u>CF. Computer Science Fundamentals</u></b>																																		
<b><u>CFCA. Computer Architecture</u></b>																																		
CFCA1. Digital logic and digital systems							2																										6	
CFCA2. Arithmetic basis																																		4
CFCA3. Basic computer architectures																																		4
CFCA4. Assembly level machine organisation																													4					8



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SD5. Key issues in software design											2		4																		6
SD6. Requirement engineering process												5																		5	
SD7. Requirements elicitation												5																		5	
SD8. Requirements analysis												6																		6	
SD9. Requirements specification												6																		6	
SD10. Requirements validation												6																		6	
SD11. Key issues in software maintenance											2				4															6	
SD12. Techniques for maintenance															6															6	
SD13. Working on a design team							2				2	2																		6	
<b>SC. Software Component Technologies</b>																															
SC1. Component definition													5																		5
SC2. Interface specification													2			3		2													7
SC3. Protocol specification													3			3															6
SC4. Reference model													3			3															6
SC5. Type of reuse					2										5																7
SC6. Re-engineering															6																6
SC7. Software integration strategies																3															3
SC8. Data integration strategies																3															3
SC9. Applications selection																3															3
SC10. Services selection																3															3
SC11. Components selection																3															3
SC12. Communication protocols selection																3															3
SC13. Linguistic construction methods															5																5
SC14. Formal construction methods															5																5
SC15. Visual construction methods															5																5
<b>SA. Software Architectures</b>																															
SA1. Software structure and architecture											2		4			3															9
SA2. Architectural styles (macroarchitecture)													5			3															8
SA3. Design patterns (microarchitecture)																3															3
SA4. Object-oriented architectural design													5			3															8
SA5. Design prototyping													5			3															8
SA6. Software engineering tools													5			3															8
SA7. Software configuration management																3															3
SA8. Software configuration identification																3															3
SA9. Software configuration control																3															3
<b>SQ. Software Quality, Testing &amp; Safety</b>																															
SQ1. Inspection and testing in the procedural paradigm				2	2																								3		7

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SQ2. Inspection and testing in the object-oriented paradigm					2																					3				5	
SQ3. Software quality concepts											3																			3	
SQ4. Software quality assurance														5																5	
SQ5. Software quality metrics														5																5	
SQ6. Activities and techniques for software quality														5																5	
SQ7. Activities and techniques for verification and validation														5											3					8	
SQ8. Definitions of testing								2																						2	
SQ9. Test selection criteria								2																						2	
SQ10. Testability														5												3				8	
SQ11. Test levels																										3				3	
SQ12. Test techniques																										3				3	
SQ13. Test related measures																										2				2	
SQ14. Managing the test process								2						5																7	
SQ15. Cryptographic methods																										4				4	
SQ16. Cryptographic algorithms																										4				4	
SQ17. Cryptographic protocols																										4				4	
SQ18. Data security and integrity																										2				2	
<b>PL. Programming Languages</b>																															
PL1. Overview of programming languages					2																										2
PL2. Advanced programming constructs					3																										3
PL3. Object-oriented programming					2	12																									14
PL4. Event-driven programming					2	4																									6
PL5. Non-procedural languages					3																										3
PL5. Database query languages					2												6										2				10
PL6. Language translation systems																									3						3
PL7. Programming language semantics																									2						2
PL8. Programming language design																									2						2
<b>HC. Human-Computer Interaction</b>																															
HC1. Foundation of human-computer interaction																															3
HC2. User interface architecture																															3
HC3. Models of HCI																															3
HC4. Prototyping user interfaces													4																		7
HC5. Building a simple graphical user interface																															4
HC6. Human-centered software evaluation																															3
HC7. Human-centered software development																	2														5
HC8. Graphical user interface design																															3
HC9. Graphical user interface programming																															3
HC10. Visualization																													4		6

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HC11. Virtual reality																														3	3
HC12. Multimedia																				4									2	4	10
HC13. Multimedia authoring tools																				4											4
<b><u>IT. Internet Technologies</u></b>																															
IT1. Hypertext and hypermedia																				3											3
IT2. Hypermedia authoring systems																				3											3
IT3. Programming languages for web-based software development																												4			4
IT4. Client-server technology																				5								2			7
IT5. Technology for developing distributed applications																				5								2			7
IT6. Building web applications for E-Commerce																												3			3
IT7. Building web applications for E-Publishing																												3			3
IT8. Building web applications for E-Learning																												3			3
	<b>Total hours</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>25</b>	<b>25</b>	<b>30</b>	<b>30</b>	<b>25</b>	<b>30</b>	<b>45</b>	<b>30</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>30</b>	<b>30</b>	<b>25</b>	<b>20</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>20</b>	<b>20</b>	<b>25</b>	<b>25</b>			