

I. Institution	
1. Institution's name	Bauman Moscow State Technical University (BMSTU)
2. Faculty (department)	Information and Control Systems
3. Postal address E-mail Web-Homepage	5, 2-nd Baumanskaya str, Moscow, 105005, Russia irina@interd.bmstu.ru www.bmstu.ru
4. Contact person/coordinator (name, phone, e-mail, position)	Liudmila A. REZCHIKOVA Head of the Centre for International Academic Mobility. Phone: (095) 263-6676, fax: (095) 267-9893; Tel/Fax: (095) 263-6673; E-mail: oir@bmstu.ru
II. Course's profile	
5. Course title	Cisco Certified Networking Academy
6. Course profile (please give some key words to specify the focus)	Combined networks technologies; Network protocols; Routing; Local computation networks; Global computation networks; Internet
7. ECTS points available? (Yes/No)	No
8. Class hours/week	12-14
9. Integrated Russian language course for beginners (Yes/No, hours/week)	Optional (6-8 hours/week provided by the Russian language chair of BMSTU)
10. Language of instruction	English
11. Integrated practical training/ research program (Yes/No, brief description)	Yes. Labs
12. Integrated cultural program: excursions etc. (Yes/No, brief description)	Yes, sightseeing tours around Moscow and Moscow region as well as around Kaluga and Kaluga region
13. Number of students (min-max)	From 12 to 24
14. Tuition fees (l ¹ / month / person)	1100 EURO/person
15. Course's duration	2 months
III. Accommodation	
17. Accommodation conditions: student hostel (description of accommodation facilities, incl./excl. food, costs (0 / month / person)	Hostel: 1. Lodging in a 10 m ² single room and a 20m ² twin room with a bathroom and a lavatory to be shared by 3 persons costs 70-100 and 45-60 per month, respectively. 2. Lodging in a single room with a bathroom and a lavatory costs 110-140 per month. Food is excluded in both cases.
18. Accommodation conditions: guest family (optional): Yes/No, incl./excl. food, costs (0 / month / person)	No

Additional description of the course

Cisco Certified Networking Academy

Course: Cisco Certified Networking Academy,
Bauman Moscow State Technical University,
Department of Information Systems and Telecommunications IU-3

Course Description:

This is Cisco Certified Networking Academy Semester 1-4 course (I. I-IV see below). It's main topics are: Networking Basics; Routers and Routing Basics; Switching Basics and Intermediate Routing; WAN Technologies.

Credits:

2CU = 80 hours

Prerequisites:

Required: none

Helpful: A++ certification; Microsoft Office Skills; Introductory programming or multimedia courses; introductory electronics

Learning Objectives:

Internetworking I

OSI Model; Internetworking Devices; IP Addressing; LAN Media & Topologies; Structured Cabling; Electronics; installation of structured cabling; use of test equipment; maintaining engineering journal; cable management techniques.

Internetworking II

Routing Theory; Router Components; Router Setup and Startup; Router Configuration; IOS; TCP/IP; IP Addressing; Routing Protocols; Router Configuration; associated hardware and software tools and techniques.

Internetworking III

LAN switching; VLANs; LAN Design; IGRP; Access Lists; VLANs; Increasingly sophisticated router configuration (IGRP, Access Lists, IPX); switch configuration; network troubleshooting skills.

Internetworking IV

WANs; WAN Design; PPP; ISDN; Frame Relay; all CCNA Exam-related learning objectives; Increasingly sophisticated router configuration; network troubleshooting skills; all CCNA Exam-related skill objectives.

Instructors:

Ivan Sidiyakin

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Youri Selihov

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Office Hours: 9:30 – 17:30

Course Web Site: www.iu3.bmstu.ru

Required Texts:

All lectures are implemented as multimedia presentations (html + flash). Each semester is available online at Cisco CCNA web site. Labs are published in pdf format and available to download.

Recommended Texts and Links:

www.cisco.com , CISCO Web site

cisco.netacad.net , CCNA etc. Web site

www.iu3.bmstu.ru/cisco , BMSTU, Department of Information Systems and Communications IU-3, Local Networking Academy Web site.

Internetworking Technologies Handbook, Third Edition, Cisco Press, 2000, ISBN 1-58705-001-3

Attendance:

Up to 24 students in class. Up to 12 students in each group in laboratories.

Schedule:

Internetworking I

Module 1: Networks and Layered Communication

Lesson ID	Lesson Headline
1a-1b	PC Hardware Lab
1c	Introduction to Networking
2a-2b	Layered Communication
2c-2d	The OSI Model
3a	Layer 1: The Physical Layer
3b-3c	Patch Cable Labs 1&2
4	Layer 2: The Data Link Layer
5	Assessment

Module 2: Networking Devices

Lesson ID	Lesson Headline
6	Repeaters, Hubs, Collisions & Bridges
7	Bridges
8a	Routers
8b	Devices (kinesthetic)
8c-8d	Network Device Setup Labs 1&2

Module 3: IP Addressing

Lesson ID	Lesson Headline
9a-b	Introduction to IP Addresses
10	Assessment
11a	Classes of IP Addresses
11b	IP Practice
12a	Why Subnet Masks Are Necessary?
12b	IP Practice
12c	IP Addresss Skills Lab
13a	How to Create Subnet Masks
13b	IP Practice
14a	Reserved Subnetwork #s
14b	IP Practice
15a	Assessment
15b	Practice for Afterschool Oral Exam #1
15c	Practice for Lab Exam #1
15d	Lab Exam #1

Module 4: ARP and RARP

Lesson ID	Lesson Headline
16	ARP
17	RARP
18	Router ARP Tables
19	Routing Protocols
20	Assessment

Module 5: Media and Design

Lesson ID	Lesson Headline
21	LAN Hardware
22	Coaxial Cable
23a	UTP and Optical Fiber
23b-23c	3 UTP Patch Cables Lab
24	LAN Design: Step 1
25	Assessment Day
26	LAN Design Guest
27	Standards
28	Cable ID Skills Lab

Module 6: Topology

Lesson ID	Lesson Headline
29	Bus Topology
30	Assessment Day
31	Star Topology
32	Extended Star Topology
33/34	Ethernet Architecture
35a	Review, Practice, Online Exam
35b	Practice for Afterschool Oral Exam #2
35c	Practice for Lab Exam #2
35d	Lab Exam #2

Module 7: Structured Cabling

Lesson ID	Lesson Headline
36	RJ-45 Punchdown Lab
37	Mounting RJ-45 Jacks Lab
38	Cable Runs
39	Mounting Cables
40	Assessment Day
41	Stringing Cable Skills Lab
42	MDF/IDF Tour; Patch Panel Lab
43-44	Cable Testing/Extended Star Lab
45	Assessment
46/47	Wiring Closets/Catchment Area Activity
48	Choosing a Closet Activity
49	Backbone and Vertical Cabling
50	Assessment

Module 8: Networks and Layered Communication

Lesson ID	Lesson Headline
51	Electricity and Electronics
52	Grounding Problems in Networks
53/54	LAN Design Practice Problem
55	Assessment Day
56	Digital Signals
57/58	Power Supplies; Dealing With Power Incidents
59	School Network Power Activity
60	Assessment

Module 9: Network Management

Lesson ID	Lesson Headline
61/62	Network Audits; Network Baseline
63	Network Management
64	Network Management Lab
65	Assessment

Module 10: Networks and Layered Communication

Lesson ID	Lesson Headline
66/70	Review
70a	Multiple-Choice Final
70b	Practice for Afterschool Oral Exam #3
70c	Practice for Lab Exam #3
70d	Lab Exam #3

Internetworking II

Module 1: The OSI Model

Lesson ID	Lesson Headline
1a	Layer 1 Challenge Lab
1b	The OSI Model/Assessment

Module 2: Layers 1, 2, 3

Lesson ID	Lesson Headline
2a	Ethernet (online)
2b	Network Addressing Activity
2c	Assessment

Module 3: Layers 4, 5, 6, 7

Lesson ID	Lesson Headline
3a	Layers 4, 5, 6, 7 (online)
3b	Transport Layer (Kinesthetic)
3c	Assessment

Module 4: WANs

Lesson ID	Lesson Headline
4a	WANs (online)
4b	Assessment

Module 5: Routing

Lesson ID	Lesson Headline
5a-5b	Network Layer and Routing (online)
5c	Distance Vector (online)
5d	Routing Loops (kinesthetic)
5f	Link State (online)
5g	Assessment

Module 6: Using the Router

Lesson ID	Lesson Headline
6a	Overview Lab
6b	Router User Interface (online); Lab 6-1
6c	Module 6 Challenge Lab
6d	Assessment

Module 7: Router Components

Lesson ID	Lesson Headline
7a-7b	Router Components (online)
7c	Lab 7-1 (Show Commands)
7d	Lab 7-2 (CDP Neighbors Command)
7e	Lab 7-3 (Remote Access)
7f	Lab 7-4 (ICMP Ping Command)
7g	Lab 7-5 (Trace IP Command)
7h	Lab 7-6 (Show Interface Command)
7i	Router Components Challenge Lab
7j	Router Components Challenge Lab (cont.)
7k	Assessment

Module 8: Router Startup/Setup

Lesson ID	Lesson Headline
8a-8b	Router Startup & Setup (online)
8c	Lab 8-1 (Router Setup Command)
8d-8e	Startup/Setup Challenge Lab
8f	Assessment

Module 9: Router Configuration

Lesson ID	Lesson Headline
9a-9b	Router Configuration (online)
9c-9e	Lab 9-1 (Router Configuration)
9f	Module 9 Challenge Lab (Config)
9g	Assessment

Module 10: IOS

Lesson ID	Lesson Headline
10a-b	IOS (online)
10c	Lab 10-1 (Show Version)
10e	Lab 10-2 (Loading IOS Images)
10f	Module 10 Challenge Lab
10g	Assessment

Module 11: TCP/IP

Lesson ID	Lesson Headline
11a-d	Intro to TCP/IP (online)
11e	Lab 11-1 (Show ARP)
11f-11g	Module 11 Challenge Lab 1 (ARP)
11h-11i	Module 11 Challenge Lab 2 (ICMP)
11j	Assessment

Module 12: IP Addressing

Lesson ID	Lesson Headline
12a	IP Addressing (online)
12b	Network Addressing Activity
12c-d	Module 12 Challenge Lab 1
12g	Assessment

Module 13: Routing Protocols

Lesson ID	Lesson Headline
13a-c	Routing Protocols (online)
13d	Lab 13-1 (Static Route)
13e-f	Lab 13-2 (RIP)
13g-h	Module 13 Challenge Lab 1
13i-j	Module 13 Challenge Lab 2
13m	Assessment

Module 14: Review and Practice

Lesson ID	Lesson Headline
14a	Lab 14-1 Final Exam Preparation
14b-e	Review and Practice
14f	Review for Written Final
14g	Assessment (take written final)
14h	Practice for Oral Final
14i-j	Practice for Lab Final

Internetworking III

Module 1: Review of 1st and 2nd Semester

Lesson ID	Lesson Headline
1a*-e*	Review
1f-g	Semester 2 Lab 14-1
1h	Assessment

Module 2: LAN Switching

Lesson ID	Lesson Headline
2a-2b	Dartmouth Design Method & TCS Overview
2c*-e*	Overview/Online
2f-g	Lab 2-1: Shared vs. Dedicated Bandwidth
2h-i	Lab 2-2: LAN Switching Modes
2j-k	LAN Switching Challenge Lab: Spanning Tree
2l	Assessment

Module 3: VLANs

Lesson ID	Lesson Headline
3a*-3b*	Overview/Online
3c-d	Lab 3-1: Creating VLANs
3e-f	Lab 3-2: Overlapping VLANs
3g-h	VLAN Challenge Lab: Multiport Sharing
3i	Assessment

Module 4: LAN Design

Lesson ID	Lesson Headline
4a*-4e*	Overview/Online
4f-4p	Design Activity/TCS
4q	Assessment

Module 5: IGRP

Lesson ID	Lesson Headline
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5a*-5c*	Overview/Online
5d-e	Lab 5-1: From RIP to IGRP
5f-g	Lab 5-2: Configuring IGRP
5h-i	IGRP Challenge Lab
5j-n	Design Activity/TCS
5o	Assessment

Module 6: Access Lists

Lesson ID	Lesson Headline
6a*-6c*	Overview/Online
6d-e	Lab 6-1: Standard Access Lists
6f-g	Lab 6-2: Extended Access Lists
6h-i	Lab 6-3: Internet Access and ACLs
6j-k	Access List Challenge Lab
6l-p	Design Activity/TCS
6q	Assessment

Module 7: Novell IPX

Lesson ID	Lesson Headline
7a*-7b*	Overview/Online
7c-d	Lab 7-1: IPX Routing
7e-j	Design Activity/TCS
7k	Assessment

Internetworking IV

Module 1: Review of Semesters 1, 2, and 3

Lesson ID	Lesson Headline
1a*-1e*	Review
1f-g	Review Lab
1h	Assessment

Module 2: Wide Area Networks (WANs)

Lesson ID	Lesson Headline
2a*-2d*	WAN Overview/Online
2e*-2f	Lab 2-1
2g-h	WAN Challenge Lab
2i	Assessment Day

Module 3: WAN Design

Lesson ID	Lesson Headline
3a*-3b*	WAN Design Overview/Online
3c-3p	WAN Design -- TCS
3q	Assessment

Module 4: Point-to-Point Protocol (PPP)

Lesson ID	Lesson Headline
4a*	Overview/Online
4b-c	Lab 4-1
4d-e	PPP Challenge Lab

4f-j	Start PPP TCS -- Design
4k	Assessment

Module 5: ISDN

Lesson ID	Lesson Headline
5a*-c*	ISDN Overview/Online
5d	Start ISDN TCS Design work
5e-h	ISDN -- TCS
5i	Assessment

Module 6: Frame Relay

Lesson ID	Lesson Headline
6a*-c*	Frame Relay Overview/Online
6d-e	Lab 6-1
6f-g	Frame Relay Challenge Lab
6h-l	Frame Relay TCS
6m-o	Finish All TCS Deliverables
6p	Assessment

Final Review for CCNA Certification Exams

Lesson ID	Lesson Headline
7a-7t	Final Review
7t	Final Review

Laboratory equipment:

CCNA Premium bundle:

CISCO2620 10/100 Ethernet Router w/2 WIC Slots	- 4
CISCO2621 Dual 10/100 Ethernet Router with 2 WIC Slots 2620	- 1
WS-C2950-24 Catalyst Switch	- 2

Class Types:

Remote

Terms:

All texts are accessible online

Assessment server is available online

Labs are 100% in person

Exams preparation & discussion is 100% in person

Classes:	60hrs
exams, exams preparation and discussion	20hrs
laboratories	40hrs
Home work:	220hrs
Total:	280hrs = 7CU