TRAINING OF ASTRONOMERS IN CENTRAL ASIA AND SOME COMPARISONS

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In the Soviet Union (SU) professional curricula were the same in each republic. After the dissolution of the SU the various states in the Commonwealth of Independent States gradually adopted quite different curricula. Some professions were narrowed in scope or were no longer provided for. Until recently there were, in Central Asia, three types of curricula for taining astronomers:

1) An "astronomy" curriculum in the Universities,

2) An "astrophysics" specialization within the "Physics" curriculum in the universities,

3) A "physics and astronomy" curriculum for future schoolteachers in the Teachers' Training Colleges.

Today in Central Asia, after *perestroika* only Tashkent State University trains astronomers. There was previously a chair of astrophysics in Tadjikistan State University, but it was discontinued a long time ago. In Kazakhstan and Kirgistan, astronomers are not trained at all. The system for training astronomers in different countries of the former SU now differs very much. For example, Uzbekistan and Lithuania use the multistep system (Bachelor, Master etc). Moscow University and many of the well-known universities of Russia and the Ukraine continue to use the old five-year system. That is why we are ready to invite would-be astronomers from neighbouring countries to tkae our bachelor's and master's courses. I will briefly describe our curricula.

The Astronomy Bachelor Curriculum has the structure shown in Table 1:

TABLE 1. The Bachelor's Curriculum

Blocks of Subjects	Planned Hours
Astronomy and general education courses	3534
Social-humanitarian courses	1836
Mathematical and natural science courses	614
Elected special courses on astronomy	544

We give lectures for the bachelor's degree in the general and special astronomical subjects listed in Table 2.

In addition, we have begun to teach masters' courses also in two specialities, namely: (i) Astrophysics and Radioastronomy, (ii) Astrometry and Celestial Mechanics. The master's curriculum has the structure shown in Table 3.

In addition to their specialization, all master's students attend the following courses together: (i) Computer and Applied Astronomy, (ii) Television Astronomy, (iii) Modern Radiation Detectors in Astronomy, (iv) Random Processes in Astronomy and the Theory of Errors, (v) Astronomy from above the Earth's Atmosphere. Separately, the two groups of students attend the courses shown in Table 4.

Relying on our long and hard experience of creating these bachelor's and master's curricula, I would like to suggest that IAU Commission 46 should organize a meeting to discuss modern educational programmes. This could improve the level of modern astronomy education and would

J. Andersen (ed.), Highlights of Astronomy, Volume 11B, 912–913.

TABLE 2. Lecture Timetable

General Subjects	Planned Hours	Special Courses	Planned Hours
General Astronomy	122	Solar Physics	40
General Astrophysics	82	Physics of Stars	40
General Astrometry	74	Extragalactic Astronomy	40
Theoretical Astrophysics	51	Theory of Spacecraft Motion	38
Celestial Mechanics	94	Elective Subject	40
Galactic Astronomy	56	Elective Subject	40
Numerical Analysis of Observational data	32	Special Labs	
Physics of Cosmic Space	38	& Practical Astronomy 150	
Computer Methods in Astronomy	46		
Radioastronomy	58		
History of Astronomy	38		

TABLE 3. The Master's Curriculum

Kind of Activity	Number of Weeks
Theoretical education	33
Scientific activity	36
Master's dissertation	17
Control of knowledge	4

particularly help the republics of the former SU to decide whether or ont to change to the Bachelor-Master system. It would be good if Commission 46 could help to arrange grants for the purchase of new foreign books and jurnals on astronomy. Central Asia would be greatly helped if there could be an International Chair of astronomy (perhaps a UNESCO chair) in Tashkent. We also have courses of doctoral and post-doctoral education.

TABLE 4. Specialized Master's Courses

Astrophysics & Radio Astronomy	Astrometry & Celestial Mechanics
Plasma Astrophysics	Theory of Establishment of an
Structure of Astronomical Images	Inertial Coordinate System
Astroclimate	Theory of Photographic Astronomy
Astrospectroscopy	Theory of Satellite & Spacecraft Motion
Theory of Stellar Evolution	Additional Chapters of Modern Astronomy
Helioseismology	Additional Chapters of Celestial Mechanics
Close Binary Systems	Planetary Astronnomy
Solar-Terrestrial Physics	Star Clusters
Cosmology	Investigations of the Earth from Space
Physics of Interstellar Medium &	Theory of Gravitational Potential
Regions of Star Formation	
Mechanisms of Radio-radiation	
from Astrophysical Objects	
Quasars and Active Galactic Nuclei	

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