

**SPORTS AUTHORITY OF INDIA**  
**NETAJI SUBHAS NATIONAL INSTITUTE OF SPORTS,PATIALA**

**DIPLOMA COURSE IN SPORTS COACHING**

**REVISED / SYLLABUS 2015-16**

**THEORY & SCIENCE OF CYCLING**

*1st Semester*

**THEORY PAPER-I**

<b>Sr.no.</b>	<b>Topics</b>	<b>Teaching Hours</b>
1.	<b>History &amp; development and organizations:</b> a. History, Modification and measurements of equipment by U.C.I. Regulations. b. Structure and function of controlling bodies of Cycling at India, Asia and world level.	<b>08</b>
2.	<b>Development of essential coaching skills and safety measures:</b> - Effective communication - Setting of athlete's goal - Preparing of training programme - Knowledge of sports rules - Knowledge of energy systems - To assist athlete in development of new skill - Providing of feedback to the cyclist - Safety issues/Measures	<b>10</b>
3.	<b>Role of a Coach:</b> - As a leader - As a teacher - As a mentor - As a psychologist - As a manager - As a role model	<b>06</b>
4.	<b>Rules and Regulations:</b> a. Regulations of various events of road, track and MTB and their interpretation b. Ability and role of a commissaire c. Responsibility and rights of the commissaries d. Tasks of commissaries before the road race.	<b>30</b>
5.	<b>Organization and management of competitions</b> Competition system for road, track and MTB events: - World Championship(Junior, Amateur ,Professionals) - Olympics	<b>08</b>

	- Asian Games	
	- National Games	
6.	<b>Drawing of fixture, formation of committees and the functions for the conduct of competitions.</b>	<b>04</b>
7.	<b>Terminology used in Cycling Sport.</b>	<b>06</b>
8.	<b>Facilities of equipment:</b>	<b>10</b>
	- Developmental trend in Cycling equipment and Cycling mechanics and their role in the development of performance.	
9.	<b>Construction and maintenance of Cycling track, equipment and training facilities.</b>	<b>08</b>
10	<b>Qualities/Characteristics of a successful coach:</b>	<b>10</b>
	a) Philosophy of coaching and concepts to be followed by the Coach:	
	- Care and supervision by the coach.	
	- Teaching athletes to exercise with their own judgment.	
	- Controlling, training activities.	
	b) Qualities and abilities of the coach:	
	a) Knowledge	
	b) Organization of training	
	c) Planning	
	d) Observation.	
11.	<b>Methods of teaching and coaching applied in Cycling:</b>	<b>10</b>
	a) Class organization	
	b) Class management	
	c) Class control	
	<b>Total Hours</b>	<b><u>110</u></b>

**THEORY PAPER-II**

<b>Sr.no.</b>	<b>Topics</b>	<b>Teaching Hours</b>
1.	<b>Coaching principles:</b> <ul style="list-style-type: none"><li>- Balance principle</li><li>- Individualization principle</li><li>- Overloading principle</li><li>- Recovery principle</li><li>- Specificity principle</li><li>- Variation principle</li></ul>	<b>08</b>
2.	<b>Warming up: General specific or competitive:</b> <ul style="list-style-type: none"><li>a) Principles</li><li>b) Advantages and disadvantages</li><li>c) Means and methods of standard warm up as per the requirement of the events.</li></ul>	<b>10</b>
3.	<b>Technique on the road &amp; track bike and their perfection:</b> <ul style="list-style-type: none"><li>a) Introduction</li><li>b) Classification</li><li>c) Importance</li><li>d) Procedure to apply the technique</li><li>e) Correction of fault</li><li>f) Adaptation</li></ul>	<b>12</b>
4.	<b>Methods of training to develop endurance, strength and speed in general and specific.</b>	<b>20</b>
5.	<b>Means and methods of evaluation of training unit:</b> <ul style="list-style-type: none"><li>a. Time of Individual</li><li>b. Speedo graph</li><li>c. Pulse</li><li>d. Following of instructions for training unit.</li></ul>	<b>05</b>
6.	<b>Bio-mechanical preparations and applications in Cycling sport:</b> <ul style="list-style-type: none"><li>a. Bi-cycle as per individual anatomy</li><li>b. Principles of motor-learning</li><li>c. Principles of standing start</li></ul>	<b>05</b>
7.	<b>Calculations (Cadence, Gear ratio in inches and meters:</b> <ul style="list-style-type: none"><li>i) Formula to calculate cadence/R.P.M.</li><li>ii) Gear ratio in inches</li><li>iii) Gear ratio in meters</li></ul>	<b>12</b>
8.	<b>Project/Assignment/Discussions.</b>	<b>15</b>
9.	<b>Role of intramural for overall development of the player.</b>	<b>05</b>
10.	<b>Team management:</b> <ul style="list-style-type: none"><li>a) Relation with associations/officials.</li></ul>	<b>08</b>
		<b>100</b>

- b) Handling media
- c) Players handling.

**Total Hours**

210

## 2<sup>nd</sup> Semester

### ***THEORY PAPER-I***

<b><i>Sr.no.</i></b>	<b><i>Topics</i></b>	<b><i>Teaching Hours</i></b>
	<b>Tactics and strategy for individual, group and team events:</b>	<b>10</b>
1	a) Definition b) Classification c) Developmental trend d) Methods/phases/stages of teaching tactics e) Description of tactics Individual/Group or team/Action or reaction.	
2	<b>Preparation and use of coaching aids and methods of using statistics for performance analysis :</b>	<b>15</b>
	a. use of video films b. watching the individual tactics of world class cyclists c. class teams and group races	
3	<b>Motor abilities:</b>	<b>15</b>
	a. Requirement of an event b. Means and methods to develop c. Methods of evaluation d. Tests (Specific)	
4	<b>Requirement of elite cyclist for high performance:</b>	<b>10</b>
	a) Motor and co-ordinative abilities b) Intellectual and psychological c) Knowledge of Rules by the cyclists d) Understanding of technical and tactical abilities.	
5	<b>Talent identification and its development:</b>	<b>12</b>
	a. Principles and procedures b. Selection Tests c. Methods of evaluation	
6	<b>Development of a cyclist on long term basis or training to cyclists of various age groups:</b>	<b>14</b>
	Under 14 yrs Under 18 yrs Above 18 yrs	
7	<b>Evaluation of progress or development of various areas, time to time (monitoring):</b>	<b>12</b>
	a. Setting of target b. Training and testing	
8	<b>Calculations:</b>	<b>10</b>
	a. Speed table for track and road events b. Deficit distance in middle distance event is 4000 M. Individual pursuit.	

<b>9 Methods of training to develop endurance, strength, speed and skill a cyclist for MTB events.</b>	<b>12</b>
<b>10. Common Cycling injuries, management and prevention</b>	<b>06</b>
<b>Total Hours</b>	<b><u>116</u></b>

## 2<sup>nd</sup> Semester

### ***THEORY PAPER-II***

<b><i>Sr.no.</i></b>	<b><i>Topics</i></b>	<b><i>Teaching Hours</i></b>
1.	<b>Means and methods of training for short and long distance events:</b> a. On the bike training for road racing b. On the bike training for track racing c. Bike handling skill training.	<b>15</b>
2.	<b>Development and demonstration of teaching abilities and improving personal performance.</b>	<b>18</b>
3.	<b>Planning of training for elite cyclists:</b> <b>i) Long term</b> - Aim and contents - Methods of training for various elements - Organization of load - Recovery measures - Rehabilitation (injured cyclists)  <b>ii) Yearly plan:</b> a) Periodisation b) Single and double Periodisation c) Multi periodisation d) Aims and contents of training of various periods e) Means and methods of training in various periods  <b>iii) Training schedule/programme</b> i) Weekly ii) Monthly iii) Yearly	<b>10</b>
4.	<b>Psychological preparations:</b> - Methodology - Components of psychological phenomena - Recognition of a cycling - Will power and its development\	<b>08</b>
5.	<b>Coaching to different age groups and genders:</b> - <b>Special consideration in dealing with children</b> - <b>Special consideration in dealing with women riders</b>	<b>06</b>
6.	<b>Competitions:</b> a. Planning for the competitions b. Competition schedule c. Recovery before competition d. Gaining knowledge about the opponent	<b>10</b>

7.	<b>Recovery and regeneration:</b> <ul style="list-style-type: none"> <li>- Means and methods of recovery and regeneration</li> <li>- Active recovery techniques</li> <li>- Passive recovery techniques</li> <li>-</li> </ul>	<b>10</b>
8.	<b>Diet and Nutrition – its role in Cycling:</b> <ul style="list-style-type: none"> <li>a) A balanced diet for the cyclist</li> <li>b) Carbohydrate loading: <ul style="list-style-type: none"> <li>- One week before the race</li> <li>- Four days before the race</li> <li>- Meals before and during the race</li> </ul> </li> </ul>	<b>10</b>
9.	<b>Medical examination:- (B.P. &amp; Haemoglobin level to be checked periodically)</b> <ul style="list-style-type: none"> <li>- Dope test</li> <li>- Permanent table of riders to test at world level or international competition.</li> </ul>	<b>08</b>
10	<b>Muscles that come into action during pedaling:</b> <ul style="list-style-type: none"> <li>- Group of acting muscles quadriceps, hamstrings and gluteus</li> <li>- Means and methods to develop these muscles</li> <li>- Stretching exercise for the concerned muscles</li> </ul>	<b>05</b>
11	<b>Discussion/Library</b>	<b>100</b>
	<b>Total Hours</b>	<hr/> <b>200</b> <hr/>



**PRACTICALS.**

<i>Sr.no.</i>	<i>Topics</i>	<i>Teaching Hours</i>
1.	<b>Warming up: General warming up procedures and various exercises for warming up.</b>	<b>50</b>
2.	<b>General conditioning :</b> Exercise to increase the efficiency of the abdominal muscles, back muscles, upper limb muscles, lower limb muscles, stretching exercise for flexibility, running to develop endurance, weight training to develop strength endurance, explosive strength, maximum strength, speed training, speed endurance training (continuous and interval method).	<b>75</b>
3.	<b>Motor coordination :</b> Mounting on the bike, ideal position on the bike, fixing of feet in the pedals and tightening of straps, rhythmic pedaling, dead start, changing of lead, stand still, riding on sprint line and dealing with the obstacles .	<b>50</b>
4.	<b>Development of personal performance and demonstration ability in road, track and MTB events.</b> a) Cornering b) Hill Climbing c) Descending d) Braking e) Gear changing f) Wheel following. g) Echelon riding h) Bit and Bit i) The bunch versus alone rider j) Making a break away k) During the finish l) Puncture drill m) Basic range-I n) Basic range-II o) Speed training p) Development range q) Riding through sand r) Passing over a stone	<b>125</b>
5.	<b>Developing the individual tactics performance and demonstration ability or personal performance and demonstration ability in both road, track and track.</b> a) Good reaction timing b) Watching of the opponent c) Riding as close as possible in a team event	<b>100</b>

- d) Changing over tactics
- e) Falling behind the group
- f) Shouldering
- g) Stand still
- h) Riding on extreme edge of the track
- i) Forming an echelon
- j) How to slow down the bunch
- k) Throwing the bike
- l) How to escape from the crash in the front
- m) Lifting of front wheel, back wheel and both wheels
- n) Crossing a ditch
- o) How to make a fall.

6. **Pedagogic Practical - teaching, training and the championships.**

**50**

**Total Hours**

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**450**

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## 2<sup>nd</sup> Semester

### **PRACTICALS**

<i>Sr.no.</i>	<i>Topics</i>	<i>Teaching Hours</i>
1.	<b>Developing the performance ability and teaching of individual, group and team tactics.</b> a) Basic range training b) Development range, training c) Massed start race d) Point race e) Team pursuits f) Road team time trial g) Sprint tactics. h) Criterium race i) Elimination race j) Top range k) Limit range l) Interval training	<b>100</b>
2.	<b>Teaching and training of individual and team tactics</b>	<b>75</b>
3.	<b>Training of specific motor abilities and tests and measurement for specific abilities.</b>	<b>35</b>
4.	<b>Repair and cleaning of bicycles, components:</b> Fitting of a tubular, alignment of a wheel, alignment of frame, bottom set, changer, headset, pedals.	<b>25</b>
5.	<b>On the bike training and methods for road racing, long distance training at a steady pace Individual training methods: Kermesse training, fixed distance - tempo training, fixed time - tempo training, paced effort training, Reverse Bit &amp; Bit training, Handicap permit Training.</b>	<b>50</b>
6.	<b>On the bike training for track racing:-</b> Russian steps fitness training, whistle training: (intensive high quality) fitness interval training, Bike handling skill training, Half lap sprint training, dead start training, sprint chase training, Three up sprint training, Bit & Bit half lap changing training (Team pursuit, paced effort steady lap training, Training specifically for pursuiter, skill training for taking start.	<b>55</b>
7.	<b>Pedagogic Practical : teaching training and officiating in the championships.</b>	<b>60</b>
<b>Total Hours</b>		<b>400</b>

**(JAGDEV SINGH)**  
**Chief Coach (Cycling)**  
**SAI NS NIS PATIALA**