

**SPORTS AUTHORITY OF INDIA:
NETAJI SUBHAS EASTERN CENTRE KOLKATA**

DIPLOMA COURSE IN SPORTS COACHING

REVISED SYLLABUS 2015-16

THEORY & SCIENCE OF ARCHERY

1st Semester

THEORY PAPER - I

<i>Sr.no.</i>	<i>Topics</i>	<i>Teaching Hours</i>
1.	History of Archery and Terminologies of Archery: A. <ul style="list-style-type: none">• Evolution of Archery• Historical Stages• Modern age India• Foundation of FITA• Formation of AAI B. <ul style="list-style-type: none">• Toxophilite.• Field captain• Lady Paramount• DOS• End.• Rebound• Foot Markers• Back and Face bow• Bare bow• Free style• Centre shot bow• Laminated Bow• Draw weight• Pressure point• Mass weight• Instinctive shooting• Drawing hand• String hand• Bow weight• String alignment• Centre line shaft size• Spine of arrow• Bow tiller• Petticoat	10

- Standard bow
2. **Type of target face and use of target face and buttress.** 5

(rules chapter-7 Book-1 chapter-4)

Type of Target Face.

- Description.
- Scoring Value.
- Tolerance of Measurements.
- Size of Target Buttress.
- Faces at Different Distances.
- Material of Target Faces.
- Competitions
- Disciplines
- Classes
- Divisions
- Outdoor Target rounds
- Indoor Target Rounds. World Archery events.

3. **Constitutions and Eligibility (Rules Book-1 chapter-2)** 20

- Name and objective.
- Membership.
- Affiliation.
- Organization.
- Congress.
- Council.
- The permanent committees.
- The Board of Justice.
- Sanctions.
- Official Languages.
- Admission.
- Eligibility code.
- Medical provisions.
- National Teams.
- Olympic chapter Rules.

4. **Championship titles and Records (Rules Book-I chapter-3, 5)** 25

- Judges (Technical Delegate).
- Jury of appeal.
- Scoring (Scorer).
- Team Officials.
- Control of equipment.
- Practice Facility.
- Championship Venue.

- Equipment and facilities.
- Dress Regulations.
- World championship titles.
- World records definition.
- World records tournaments.
- Confirmation of World records.

5. Archery Safety Measure, Range Etiquette and field Layout: 20

(Rules Book-I Appendix-9)

- Group safety.
- Individual safety.
- Equipment safety.
- Range etiquette.
- Range layout.
- Major events.
- Other events.

6. Equipment Selection, Repair and care, Maintenance and Storage: 10

- The bow length, weights.
- Arrow groups, lengths.
- Matching with bow-additional items and accessories Tab, Button,
- Clicker, Stabilizers, bow square, chest protector, bow sling, stringer,fore arm guard.
- Arrow Nock
- Point
- Fletch
- Nocking Point
- Kisser Button
- Arrow Rest
- Bow Limbs
- Arrow
- Bow Sight
- Stabilizers
- Bow Handle
- Button
- Finger Protector
- Arm Guard
- Chest Guard
- String
- Replace A Plastic nock
- Fletching
- Arrow points
- Arrow Rest
- Nocking point
- Kisser button

7. Requisites of a coach: 10

- Role of the coach.
- Dignity.
- Integrity in relationship.
- Professional standards.
- Confidentiality.
- Coach Responsibility.

8. Doping Control Procedure: (Rule Bok-1 Appendix- 4) 10

- Doping preamble and principles, doping, classes and methods.
- Selection of competitors.
- Disciplinary Procedure, sanctions, Gender verification, prohibited Methods, Classes of Drugs subjects to certain restriction.

Total Hours

110

THEORY PAPER - II

<i>Sr.no.</i>	<i>Topics</i>	<i>Teaching Hours</i>
1.	Warming up and General and Specific Exercise: <ul style="list-style-type: none">• Importance.• Principles.• Cooling off.• Cardiovascula development.• Calisthenics.• Chart of callisthenic exercise useful for archer.• Flexibility and aerobic exercises.• General principles of strength training exercises.• List of weight Training exercises useful for archery.• Isometric exercises.• Recovery.• Various means and method for Recovery.	15
2.	Types of Bow and Nomenclature: <ul style="list-style-type: none">• Long bow, Recurved bow, Take down bow, Part of bow and arrow,• Handle riser, Sight window, Grip, Bow notch, String groove, Nock, Loop, Fletching, Cresting, Arrow plate, Pivot point, Recurve, Stabilizers, Damper.	10
3.	Stringing the Bow and target Archery Tackle: <ul style="list-style-type: none">• Step Through Method.• Cord Bow Stringer.• Box Bow Stringer, Wall Stringer.• Loop Method, Push Pull Method.• Bow, Arrow and related shooting equipment.• Selection of Beginner bow.• Criteria of selection of Archery tackle for Individual, Sub-Junior and seniors.	10
4.	Eye dominance Test: <ul style="list-style-type: none">• Cross palm Method.• Finger pointing Method, Card Board Method.• Principle of using left hand right hand bow.	15

5. Basic of shooting and first lesson in Archery:	15
<ul style="list-style-type: none"> • Classic form of Archery. Nine steps to gold. Stance, Nocking, Extending, Drawing, Anchoring, Aiming, Release, After hold. Natural Stance, Use of Back muscles and shoulders. • Archery Safety, Arrow length measurement, Stringing the bow, Mimatics without tackle, Mimatics with tackle. Instruction and systematic shooting practice. 	
6. Method of Aiming.	20
<ul style="list-style-type: none"> • Instinctive Method, Pre Gap method, Post Gap method, Point of AIM Method, Sight Method. 	
7. Lesson procedure on the range variation:	10
8. Yoga.	15
<ul style="list-style-type: none"> • Role of yoga in archery. 	
Total Hours	<u>110</u>

PRACTICALS 1st SEMESTER

Sr.no.	Topics	Teaching Hours
1.	<p>i) Physical conditioning / Training for physical power.</p> <p>ii) General endurance, Jogging, Long distance running, Various Games and calisthenics.</p> <p>ii) General Strength- Weight training circuit training. Medicine ball exercises.</p> <p>iii) Flexibility Exercises- stretching exercises. Draw Practice with rubber tubes. Draw practice with the training bow.</p> <p>iv) An exercise of repeatedly drawing the bow.</p> <p>v) Drawing a bow and holding at full draw, an exercise of the time for normal shot.</p>	25
2.	<p>Technique training and practice with tackle and without tackle and placing students on the shooting line according to station as per learning stage.</p> <p>i) Teaching of various basic technique, Teaching stages. Application and importance.</p> <p>ii) Stringing the bow in various ways.</p> <p>iii) Square stance. Close stance. Natural stance. Open stance.</p> <p>iv) Nocking the arrow to the string. In line draw and proper anchoring.</p> <p>v) Dry Practice without bow.</p> <p>vi) Draw practice with flexible rubber band.</p> <p>vii) Draw practice with training bow (less pound).</p>	45
3.	<p>Eye dominate test:</p> <p>i) Through cross plam method.</p> <p>ii) Finger pointing method.</p> <p>iii) Card board method.</p>	5
4.	<p>Fundamental Techniques, Training and practice.</p> <p>i) Draw. ii) Chin Anchor. iii) Side anchor. iv) Hold</p> <p>iv) Aiming. vi) Alignment of string and sight. vii) Release</p> <p>viii) Follow through.</p>	45

5.	Field marking and officiating practice, Organizing competition.	100
	i) Field layout. ii) Target setting. iii) Fixing the target faces.	
	iv) fixing the target numbers, flags and placing red and yellow flags.	
	v) Positioning the audio visual time control equipment, zebra plate.	
6.	Pedagogic practice, fault correction:	50
	i) Checking bow hand, wrist, elbow, grip, shoulder.	
	ii) Checking string arm, elbow.	
	iii) Head angle checking.	
7.	Shooting in wind and rain:	36
	i) The changing location of the arrows landing in the Target.	
	ii) The changes in the flight of an arrow.	
	iii) Changes of team tactics during a team round contest when wind Blows.	
8.	Nocking point making and Training for the Physical power & ability to aim at various points around the target face:	90
	i) Measuring string height.	
	ii) Nocking height.	
	Total Hours	<u><u>396</u></u>

2nd Semester

THEORY PAPER - I

<i>Sr.no.</i>	<i>Topics</i>	<i>Teaching Hours</i>
1.	Coaching aids Training Aids and Technique Rectification. <ul style="list-style-type: none">• Classification.• Uses• Trends in Their Development.• Locating Problems in form and analyzing problems in form and shooting introductory notes. Beginners problems.• Position of the instructor to observe to detect problem. Faults: <ul style="list-style-type: none">• Bow arm elbow position• Peek.• Poor body posture.• Body tension.• Tension in drawing hand and arm.• Bow hand tension.• Raising of shoulders.• Creping.• Collapsing.• Pluck.• Bow cant.• Dropping the bow arm.• Raising the bow Arm.• Sore third finger• Not holding the string in the distal joint.• Aiming Problem.• Cross viewing.• Arrow fall off Rest. Arrow Patterns <ul style="list-style-type: none">• High arrow• Low arrows• Right Arrows• Left Arrow• Seattered Arrows.	20
2.	Injuries related to archery and women in Sports: <ul style="list-style-type: none">• Form Related Injuries.• Sore finger	15

- Type of finger Tabs
 - Added finger Protection
 - Sore shoulders
 - Strings hand side
 - Training Technique
 - Bursities, Tendonits, The bow arm side.
 - Upper back pain, Use of head and ice
 - Psychology reason for injury.
 - Physiological and anatomical difference between sexes.
 - Special creatures for Training of women.
3. **Environmental effects and remedies and excessive sun and performance:** 10
- Introduction
 - Shooting
 - Equipment
 - Field fixture
 - Competition-Internal and External
 - Dealing with sunburn
4. **Stress and anxiety effect on performance:** 15
- Type of stress, why does stress occur for the archer
 - Physiological and psychological symptoms before and after competition.
 - Suggested training technique effective and corrective procedures.
5. **Out door target Archery Round, Olympic Round Field Layout and seeding diagrams.** 10
- Layout Olympic round
 - Venue equipment
 - Competitor equipment
 - Shooting
 - Order of shooting and time control
 - Question appeals and disputes
 - Seeding digrams
 - World archery Olympic round individual seeding diagram.
 - Olympic round team seeding diagram.
 - Indoor Olympic round individual seeding diagram.
6. **Nutritional demands in Archery.** 10
- Introduction- Energy Metabolism.
 - Importance of Nutrition.
 - Nutrition and fatigue, Weight control and Archery.
 - Pre tournament meals

- During the event.
- Summary.

7. **Improving focus on attention, concentration and confidence Training.** 10

- Introduction
- Integration of mind and body the nideffers theory on attention and archery suggested training techniques, cues, guidelines.
- Importance of confidence training.
- Objective self assessment and analysis.
- Recommendation Implementation for coaches.

8. **Periodization and Training plans for the elite archers.** 10

- Introduction objective period -1 Phase -1
- Preparatory period.
- General Training, Specific Training, Competition Training.
- Period-1, Phase-2, preparation period, competition, Period, Transition period, summary.
- System of raining
- Long term Training plans.
- Weekly and daily practice and competition scheduled and modules.
- Individual Training schedules.

Total Hours

100

THEORY PAPER – II

<i>Sr.no</i>	<i>Topics</i>	<i>Teaching Hours</i>
1	.Sequence in shooting. <ul style="list-style-type: none">• Introduction.• How to build up sequence.• Mind and mental control.• Perfecting sequence of a shot.	8
2.	Biomechanical aspects of Archery. <ul style="list-style-type: none">• Introduction.• Ten principles of Biomechanics.• Joint torque.• Summation of joint forces.• Continuity of joint forces.• Combined influence of force and the time of application.• Direction of force application.• Stability.• Summation of body segment velocities.• Production of rotation motion.• Manipulation of rotational inertia.• Rotational motion manipulation.• Leg Strength, Grip Strength, Draw Force, Reaction Time,• Visual Reaction time, clicker reaction time. Anticipation time. Body type, Visual Acuity.• Stance and centre of gravity. Classification of Stance position. Consistency of stance position, summary of force platform Result, Sighting Motion Result, Summary of sighting analysis.	26
3.	Biological cycles. <ul style="list-style-type: none">• Introduction.• Body's built in clock.• Daily cycle.• Variation of body temperature.• Biological rhythm of the body.• Jetlag time zones.• Effect of time zone changes of human body.• Correction methods, travel to the east (prior to departure).• Travel to the west (prior to departure).• Travel to the east (After Travel).• Travel to the west (After Travel), Other effects.• Practice prior to competition (After Travel)	8

4. **Kinematics chain-use of shoulder and back muscles and muscle used in Archery.** 8
- Introduction.
 - Concept kinematics chain muscles to form the kinematics chain.
 - Biomechanical advantage of kinematics chain to shooting skill.
 - Back Muscles
 - Shoulder
 - Abdominal
 - Muscles involved during drawing, anchoring, Holding and Release.
5. **Talent identification.** 10
- Motor qualities.
 - Mental abilities.
 - Scouting talent.
 - Grooming talent.
 - Models.
6. **Bow dynamics and Arrow dynamics.** 10
- Bow Mechanics, energy, Transfer of energy, Bow design, Length, Bow arrow Relation. Thickness, Width of Limb, Limb Stress Distribution, Limb design, Degree of centre. Shot, handle design, Bow alignment. Bow efficiency, Stack, dynamic Balance, tillering. Arrow Behavior, Arrow's Paradox. Spine, weight, Point of Balance. Arrow size arrow length, Selecting Arrow size.
7. **Methods and technique of:** 10
- Teaching, training and coaching.
 - Class management and control.
 - Behavioral management.
 - Style of coaching.
8. **A. Recurve Bow tuning and the bow string Function and Compound Bow Set up.** 20
- How does a bow work, Archer's paradox.
 - Controlling vibration, Draw weight.
 - Arrow selection, Size of fletching.
 - Static Tuning. Torque. Torque and dampening.
 - Equilibrium of grip, Location of centre of gravity.
 - Control Rotation, function of stabilizers Tiller.
 - Nocking point adjustment. Method of tuning. The bare shaft method.
 - The eliasion method. The variable distance method.
 - String function. String attachments. Factors Influencing breakage.

- Abrasion, String construction method.
- String twist. Serving direction. Brace Height.

B. Wax application serving reinforcement String dynamics.

- Basic compound bow setup. Setting tiller.
- Setting wheel or cam rollover.
- Setting a nocking point. Setting up an arrow rest.
- Setting rest pressure. Setting peep height or kisser button.
- Setting peep rollover. Choosing peep sight size.
- Setting other components.
- Miscellaneous components.

Total Hours

100

PRACTICALS 2nd SEMESTER

Sr.no.	Topics	Teaching Hours
1.	Physical conditioning/ Training. <ul style="list-style-type: none">• General Endurance, Jogging, Running.• General Exercises, Calisthenics Game.• General and specific strength development weight training medicine ball exercise.• Warming up general and specific.	25
2.	Breathing during anchor and release. <ul style="list-style-type: none">• Set, Set up, Drawing, Anchor, The speed of release.• The distance of finger travel during the release.• The use of back muscles at the time of release.	35
3.	Preparation for shooting in the wind and rain and shot analysis. <p>The adoption of changing the extending time.</p> <ul style="list-style-type: none">• Training for maintaining the balance of extending.• Proper stance.• Body balance at the time of anchoring.• Proper anchor point.• Drawing under the clecker.• Release pattern.	65
4.	Shooting Practice and assessment (Long distance and short distance) <ul style="list-style-type: none">• Application of fundamental technique training for clicker control, bow control Scoring.	70
5.	Pedagogic Practice and mental practice. <ul style="list-style-type: none">• Teaching, Coaching, Problem correction.• Tension relaxion, Imagery training.	70
6.	Officiating. <ul style="list-style-type: none">• Judging, Scoring.• Duties and role of director of shooting.• Operation of visual time control equipment.	35

7.	Maintenance of equipments, string making and Bow tuning:	60
	<ul style="list-style-type: none">• Arrow repairing.• Replacing an arrow rest.• Remarking the Nocking point.• Clicker setting.• Arrow making• Various distance method.• Bare shaft method.• Paper tuning.	
8.	Project Work:	20
	Total Hours	<hr/> 380 <hr/>